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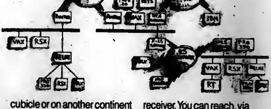

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EDITORIAL

Nothing Standard About Standards

If there is one thing that is not standardized nowadays, it's standards. In fact, the whole idea of standards becomes increasingly farcical as more and more are proposed.

What's worse, there are almost as many standards organizations as there are standards: The American National Standards Institute (Ansi), the International Standards Organization (ISO), the National Bureau of Standards (NBS) and the Institute for Electronics and Electrical Engineers (IEEE) are four that come to mind quickly. This mishmash of acronyms is constantly jumping off the pages of various trade publications. All of these well-meaning groups are working toward uniform standards that will integrate the far-flung world of information processing and make it possible for all of us to communicate.

But.

But, the fact of the matter is, there is only one kind of standard that really matters — the de facto standard.

The Xerox Corp., Intel Corp. and Digital Equipment Corp. Ethernet local-area network "standard" is a prime example. First delineated in 1980, Ethernet quickly caught on as a tangible example of something that actually existed. As a result, an entire industry was spawned.

Ethernet-compatible companies such as Ungermann-Bass, Inc., Interlan, Inc. and 3Com Corp. went into business with the understanding that Ethernet was here to stay.

Despite the emergence of these and other similar companies, however, the IEEE 802 Local-Area Network Standards Committee went to work on a standard that, while agonizingly close to Ethernet, was not completely Ethernet-compatible. The machinations and infighting over the proposed 802 standard did nothing to serve end users, and what eventually emerged was a standard that will be ignored by many vendors.

Of course, when talking about de facto standards, the three letters, "IBM," are never far from the forefront. Staying with local-area networks, we all know that, IBM Cabling System or not, many potential local-area network buyers will wait until IBM finally unveils its token-ring network before they make the purchase plunge.

Fortunately, IBM has enough clout so it could basically dictate to 802 what the token-ring standard should look like. Xerox, the main force behind Ethernet, did not.

And continuing on the topic of IBM, the company deserves credit for working with 12 other vendors to demonstrate high-level ISO Open Systems Interconnect-type communications at the National Computer Conference in Las Vegas last month. According to IBM President John Akers, the company has been cooperating with the ISO on the proposed standard for years.

However, IBM obviously retains a strong vested interest in Systems Network Architecture (SNA), its de facto standard that rules the real world of computer communications.

It is one thing for IBM to cooperate with 12 vendors in a one-time display; it is something else to alter SNA. IBM is likely to take the same tack as Xerox: Show us a way to improve what we already have, and we will implement it into our de facto standard.

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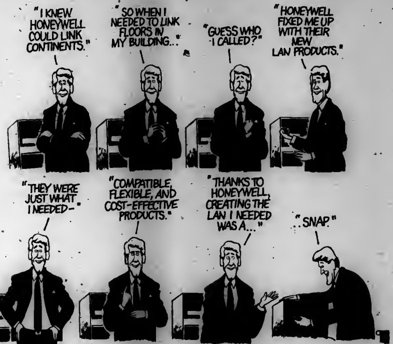
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DIALOGUE

What is your opinion of teleconferencing, and what are its future prospects?

Julianna Guy, telecommunications deputy commissioner, Alaska Administration Dept., Juneau, Alaska:

"I think teleconferencing is marvelous and wonderful. Teleconferencing's potential has barely been tapped. [The Alaska Administration Department] does a lot of teleconferencing. The legislative branch has set up a dedicated teleconferencing network, connecting 18 sites throughout the state. Citizens can come to one of these central offices and talk to their legislators, who are in Juneau. It is too difficult for the legislators to visit their constituents in the winter.

"The executive branch does teleconferencing on an increasingly frequent basis. The administrative division has been charged with setting up a program to increase the use of teleconferencing and decrease travel. We are also putting our toe into videoconferencing, as we believe that it will become increasingly valuable. Once people get used to the idea of teleconferencing and become comfortable with the equipment, they will like it."

Robert C. Walsh, management information services manager, Schwinn Bicycle Co., Chicago:

"I explored teleconferencing until I looked at the price tag. We have four distribution centers, a manufacturing facility and about 1,900 dealers across the nation. Between the cost of airfare and the time displacement, I thought Schwinn would be a candidate for that. I think public facilities would make more sense to us than private facilities.

"Some of the hotel chains are putting teleconferencing facilities in, so we could just go to our local site, and the people on the other end could go to their local site. We could avoid the outrageous capital investment by renting and not have to have technical skills."

Alexander McCatty, communications manager, National Distillers & Chemical, Louisville, Ky.:

"I think it has a very definite future in the business marketplace. I believe it is pretty expensive, especially if you go with full-motion video, but I also believe that it would be very cost-effective if people were to recognize it as a communications tool, rather than a replacement for travel. As the technology improves and the cost goes down, the future is extremely bright. Look at the history of the telephone. When it was first invented, it was considered to be a interesting toy."

Frank Ferrara, corporate communications manager, GAF Corp., Wayne, N.J.:

"Teleconferencing is a slow comer. I thought it would catch on a lot faster. The price of teleconferencing has slowed its acceptance. The advantage of teleconferencing is that it eliminates travel. Aside from price, the prime disadvantage is that there is not a lot of expertise in this industry.

"The concept of teleconferencing as a shared commodity has moved this service in a progressive, positive direction. The future prospects of teleconferencing could center on overseas types of corporations. They would realize the benefits of this service."

Rob McCrory, network services manager, Dynacor, Inc., Phoenix:

"We are looking at teleconferencing in the health-care industry in terms of education. Teleconferencing is expensive. The state and federal legislatures' concern about containing hospital costs will be a big factor in implementing any type of extensive teleconferencing network for hospitals.

"For our particular application, teleconferencing would allow us to broadcast surgical procedures to hospitals in other parts of the country. Teleconferencing would offer a practical way for large hospital corporations with decentralized management structures to hold corporate meetings without putting everyone on a plane and flying them to one central point.

"Teleconferencing's future is positive. As newer technologies and more cost-effective means of providing the services are made available, it will play a larger role in every type of industry."

Carlisle Reames, vice-president for telecommunications, Bankers Trust of South Carolina, Columbia, S.C.:

"I think the prospects for teleconferencing are unlimited. I do think that the innovative industry has got to come up with better methods and at less cost in order for it to be a more widely used function. That is one of the things that is holding us back from really using a lot of it.

"I think the process also needs to be simplified for the users. When you are trying to put on a session for some of your key people, you need a production coordinator, which also adds to the expense. The executive should be able to use it with ease. I see it both as a tool to provide accurate information on a timely basis and a substitute for traveling."

T.J. Casey, management information systems director, Spalding Sports Worldwide, Chicopee, Mass.:

"Teleconferencing is halfway between a phone call, voice mail or electronic mail and the personal visit. The advantage of a personal visit is that it allows for spontaneous dialogue. Most people in our society are not going to be able to have this spontaneous problem-solving dialogue in a teleconferencing environment.

"Teleconferencing will have a future when the costs come down significantly and when management finds within itself the ability to decide what types of communications are going to be enhanced by the visual aspect of teleconferencing. I don't view teleconferencing as becoming a dynamic technology in the near future. It could become part of the normal telephone call within five years with the proliferation of screens on telephones by that point."

LETTERS

Strung Out?

I would like to set the record straight about several statements in your June 6 editorial, "Strung Out," concerning the IBM Cabling System.

You said the IBM announcement is "stringing along" potential customers who won't be using the cabling "fully" for the next two or three years. You also expressed doubt that IBM will ever provide a local-area network.

Far from stringing users along, the IBM Cabling System offers immediate advantages. It can be used to connect all current IBM computers to their workstations in a non-local-area network environment. Once the IBM Cabling System is in place, workstations and other devices can be moved quickly among offices — without rewiring — by plugging into a common wall outlet. Because rewiring expenses are eliminated, the Cabling System begins to save money immediately and will pay for itself in just a few years.

IBM intends to provide a local-area network within two or three years — one that uses the IBM Cabling System, token-ring architecture and components to be announced at a future date. It is being designed with open architecture to provide for the attachment of many manufacturers' products.

R.H. Goldberg
Division Director
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Rye Brook, N.Y.

On Communications welcomes letters from its readers. Letters should be typed, double-spaced and no longer than 150 words. They should be addressed to *Editor, Computerworld On Communications, 375 Cochituate Road, Box 880, Framingham, Mass. 01701.*

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PRO & CON

Should Smart Shoppers Buy IBM's Cabling System?

The communications world has anxiously awaited the imminent introduction of IBM's token-ring local-area network for the past two years.

Media and industry pundits falsely predicted its unveiling, time after time.

What finally came was not a network, but the wiring for a network. The "data highway," as IBM referred to the network, is still a couple of years away. But in the meantime, users that anticipate buying the network when it arrives can wire their buildings in advance.

The wiring was dubbed the IBM Cabling System. It consists of a combination of twisted-pair and fiber-optic cabling, omitting the coaxial cable that has come to be commonly associated with local-area networks.

Predictably enough, the system has sparked a controversy. Some say it does not make sense to wire a building for a network that may never actually appear. Others say that the system makes sense now and does not need an IBM local-area network to justify its installation.

RAY MEDICI

PRO

By James T. Boyle

The recently announced IBM Cabling System is designed for both immediate use in connecting currently available computers and workstations and as the foundation for a local-area network that IBM intends to implement within two to three years.

But do not let the future function of the cable confuse the issue. The Cabling System is meant to be installed now and used fully as a common cabling replacement for coaxial, twin-axial, twisted pair and other special cabling. IBM believes that even a customer who is not certain he will ever need a local-area network will be strongly motivated to consider the IBM Cabling System whenever a building is being constructed or renovated.

Why? Because IBM's Cabling System is meant to soothe an increasingly sensitive nerve in the customer's corporate organization: the cost and complexity of installing or relocating data devices within a building or group of buildings. This growing concern reflects an environment of overcrowded cable raceways and ad hoc wiring paths that make the identification and replacement of a particular cable so difficult that often it is easier to run new wire without removing the old.

Another key point is that most of IBM's products, including workstations and computers, will attach directly to the IBM Cabling System, and many other products will also attach.

The customer feedback that IBM has received so far has been very positive and, by all indications, IBM has correctly identified what a customer needs now and for the future. To date, 3.5 million feet of cable have been installed within IBM itself and over 10 million feet should be installed by the end of 1984.

The IBM Cabling System embodies a structured wiring concept, which means that it is permanently wired, just as telephone lines are run in buildings today, with connections made to outlet plates in office walls. By eliminating most of the expense of moving a workstation with this move-and-plug-in approach, IBM estimates that most customers will find that the cable pays for itself in a relatively short time.

Depending on the type of cable ordered, the IBM Cabling System can be used for data only, or for both voice and data. In the latter case, the outlet plates contain both a data receptacle and the standard telephone jack. Inside the cable itself, which runs from the outlet back to a wiring closet, are two twisted pairs for data transmission and four twisted pairs for voice transmission. In the closet, voice and data pairs are separated with the voice routed

(Continued on Page 8)

Boyle is division director, connectivity and switching, IBM Communication Products, Research Triangle Park, N.C.

CON

By Brian Jeffrey

There is an almost Alice-in-Wonderland quality about IBM's token ring. Nobody has seen it. Nobody will, by all accounts, be seeing it until 1986 or 1987. It has wires — 16 companies will be happy to supply them. It is a standard — the Institute of Electrical and Electronics Engineers has written one. It will be supported by a number of vendors. It is widely debated.

For a nonexistent product, this is unusual, to say the least. The Alice-in-Wonderland quality is compounded by the knowledge that development work began five years ago in Zurich, that IBM is now on its second private branch exchange vendor and that Texas Instruments, Inc. has apparently been working on very large-scale integration (VLSI) circuitry since September 1982: Presumably, the bugs will have been ironed out by 1986.

Enough has been said about the token ring by IBM to give loud warning signals to end users. From what is known now, the indications are that the token rings will be even later than IBM says; that they will be lacking in any real incentives for implementation; that all this is likely to result in heavy end-user outlays for additional hardware and software incompatible with other IBM local-area network offerings. For a product we have not even seen yet, this is disturbing.

First, IBM has set an awesome development task. It has taken an architecture derived from the 8100 series loop and announced its intention to implement it in the context of the Rolm Corp. CBX II, supporting virtually the entire IBM product line and providing integration of voice and data traffic. The indications are also that the development work undertaken from 1979 to 1983 has not made much of a contribution to the process. After trouble with Mitel, Inc., VLSI snafus with Texas Instruments and a variety of other problems, it appears that IBM started again with Rolm, more or less from scratch, after buying into the latter last June. Under the circumstances and given IBM's track record to date, a two- to three-year implementation schedule must be regarded as optimistic. End users investing in token-ring cable plant now may find that the wiring scheme is not practically usable until 1986 or 1987; if then.

Second, it is not clear that IBM has resolved the problem of cost or benefit trade-offs that has retarded the local-area network market until now. All of the arguments advanced by IBM so far for use of the token ring have been made by local-area network vendors since the late '70s. So far, high levels of interest among end users have not been matched by corresponding outlays. The fact is that local-area networks have been used predominantly where new facility wiring is being installed anyway, where there are specific nonmainstream requirements for high-speed data traffic and — in the case of micro-local nets such as the Corvus Systems, Inc. Omninet and Nestar Systems, Inc. Cluster/One — where the installed base in a given geographical area consists predominantly of personal computers.

Most of the functions generally identified with office automation can be implemented over existing wiring plant without the provision of packetizing and routing mechanisms by local nets. The token ring may be economic in its use of conventional twisted-pair plant, and its use of wiring concentrators undoubtedly helps reduce downtime, but IBM has not given any indication of what can be done with the token ring that cannot be done more economically by other means. This is important because the token ring is likely to form part of some very inefficient and expensive Systems Network Architecture (SNA) scenarios.

(Continued on Page 9)

Jeffrey is director of Research for the International Technology Group and manager of its "IBM-Watch Program," Palo Alto, Calif.

PRO *(From Page 7)*
through the private branch exchange (PBX) environment in the usual way.

Several PBX manufacturers have tested the voice capabilities of the IBM Cabling System with their telephones and digital PBXs and found that IBM cable will support all the features and transmission speeds each offers. These manufacturers include AT&T Information Systems, Mitel, Inc., NEC America, Inc., Northern Telecom, Inc. and Rolm Corp.

The price of IBM's Cabling System has been criticized by some as too expensive. If the comparison is being made with traditional cabling, this point may seem valid — but only in the original installation phase.

Within five years or less — depending on individual site situations — IBM believes its system can pay for itself by avoiding the expense of material and labor in rewiring as well as reducing potential losses of productivity.

IBM's typical customer has more than one type of terminal or workstation and, until now, has needed more than one kind of cable to handle the different types of terminals. Customers have had to run the particular cable to the particular office for the particular terminal type and person that is there. When that person, office or terminal changes, the customer has to rerun a different cable to a different office and/or the same office.

The labor involved in pulling fresh cable runs about three times higher than labor costs in prewiring a building during renovation or before it is occupied. The productivity loss occurs when an individual being added or moved has to wait four to 10 weeks while arrangements are being made to provide service in the new office.

One of the earliest users of the IBM cable will be American Express Co. The firm is in the midst of constructing a new 51-story building in lower Manhattan. When the building opens, it plans to have 2,500 terminals (not all of them IBM) among 7,000 offices, which ordinarily would involve five different wire types.

American Express projections indicate a substantial growth and relocation of terminals over the next three to five years in that building. By the end of that period, American Express calculates that the IBM cable will have paid for itself.

American Express chose IBM's cable after a thorough examination of what different vendors are offering and the current state of local-area network technology.

The local-area network IBM intends to implement within two to three years will use the Cabling System and components planned for future announcement.

The statement of direction that IBM issued at the same time it announced the Cabling System specified that the local-area network it plans to implement would employ a star-wired, token-ring topology.

This is the same type of local-area network that is the basis of the technical contributions IBM has submitted to the local-area network standards committees of the Institute of Electrical and Electronics Engineers and the European Computer Manufacturers Association.

IBM intends to provide a local-area network with open architecture. It wants all to participate and is going to encourage participation.

But for today, the IBM Cabling System, as a wiring solution, can provide meaningful cost-saving and productivity benefits as well as a logical step for the future.

Getting a group of five or six personal computers networked isn't that big a deal. But it gets complicated when the group gets bigger. And in case you hadn't noticed, the groups are getting bigger. Fast.

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It's a far-sighted solution, even if all you want to do now is hook up a few PCs economically. And it's the *only* solution when PCs need to be mixed cost effectively into a high-speed corporate network with devices from different manufacturers.

In heavy ne
high performan

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CON *(From Page 7)*

The third drawback of the token ring is that it is an SNA product. As described by IBM, the token ring provides a physical communications infrastructure and packetizing and routing functions implemented at the data link level of SNA. The higher levels of the token ring's protocol structure merge into those of SNA.

In effect, the token ring is not a local-area network using SNA, but a version of SNA using local net technology. This is a major point. The advantages of local net technology since the late '70s are that they permit a genuinely decentralized processing environment that constitutes a break with the old batch hierarchy of terminals, via controllers to hosts.

Help may be available from IBM for those deterred by the token ring. Following its tradition of contention management, IBM looks ready to release two sets of local network strategies on the large-account world. While IBM's Communications Products Division has been engaged in getting the token-ring scenario off the ground, the company's Entry Systems Division has been developing a separate and largely incompatible set of local network offerings. Entry Systems, responsible for IBM's micro strategy, has been looking at the local network as an infrastructure for personal computers.

Its offerings are comparable with those of established vendors, and in several cases, they are apparently based on third-party products. The net result is likely to be a series of introductions of bus local-area network systems using coaxial cable media and supporting micros.

This is good news or bad news, depending on how one looks at it. It is good news for those with large bases of micros, bad news for those who remember the effects of IBM's last major exercise in contention management. This gave the world an incompatible and uncommunicative line of office systems such as the Displaywriter and, in 1980, a promise to figure it out in the next five years.

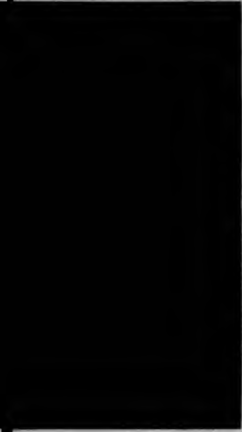
It is possible but not likely that the local-area network strategy of Entry Systems and the token-ring strategy have been coordinated such that the respective offerings will be compatible. The indications are that the two IBM divisions have been going their own way, and it is difficult to see how coaxial cable bus offerings could be coordinated with a complex star-wired Rolm CBX II-based system, which has the added disadvantage of not being off the drawing board yet.

Thus, there is a distinct possibility that, in a few years, users that have invested in IBM local nets will receive a statement of direction that these will, in due course, be able to talk to each other.

In the final analysis, what is striking about IBM's local network strategy is not that it is new, but rather that it is vintage IBM. Local net technology has been assimilated into SNA and new technical capabilities have been used to enhance an elderly architecture whose benefits to end users have always been dubious.

IBM is right that the whole token-ring scenario is "evolutionary" not "revolutionary," but the question is whether end users really want to evolve in the direction that IBM would like them to and whether commitment to the token ring involves commitment to SNA.

The longer the evolutionary path occurs, the less chance there will ever be to reverse it. End users have a choice about implementing the token ring. If they go with it, they may find that the choices after that start to diminish.



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NEWS ANALYSIS

AT&T Allowed To Resell Services

The never-ending give and take of communications deregulation gave last month when the Federal Communications Commission (FCC) ruled that AT&T Information Systems may resell transmission services and the Bell operating companies may act as integrated sales agents.

In allowing AT&T Information Systems to resell domestic local and long-distance service, the FCC helped to shore up a pronounced chink in the still-new company's overall armor. In the past, the firm was prohibited from offering such. services by the terms of the FCC's Second Computer Inquiry, which established strict boundaries between what AT&T and its spun-off company could offer.

Interestingly enough, the move could put AT&T Information Systems in direct competition with its parent, AT&T.

The FCC reasoned that the time was right to unshackle AT&T Information Systems because the number of telephone service suppliers has increased while AT&T's market power in the equipment industry has declined.

As might be expected, the decision drew quick and sharp criticism from long-time Bell antagonist, the North American Telecommunications Association. In its press release, the group said the two rulings "mark a significant retreat from the strong, proconsumer, pro-competitive thrust of the basic Computer II plan."

The release goes on to say that, through its actions, the FCC is "recreating monolithic marketing forces within AT&T and the [Bell operating companies]."

AT&T Gets Green Light On CPE Lease Rate Hike

AT&T Information Systems also made the news when the Federal Communications Commission (FCC) defended the company's decision to begin charging higher lease rates July 21 for its customer premises equipment.

The International Communications Association (ICA) forced the ruling when it petitioned the FCC to strike down the average 20% increases.

However, the FCC added that such increases must be adjusted at eight-month — instead of six-month — intervals, as was originally allowed. Further, the FCC declared that the next such increase may not be enacted until July 1, 1985. The original date for that increase was May 1, but the date was rolled back because this current hike is going into effect two months earlier than was planned by the commission.

As the ICA pointed out, in order for AT&T Communications to raise lease prices, it must have first offered the effected equipment for sale. The ICA claims no such offer was made.

Last December, the FCC issued a decision, known as Docket 81-893, that established two lease programs, one for customer premises equipment offered for sale on that date and the other for products offered later.

For equipment not offered for sale as of Jan. 1, Docket 81-893 allowed users two years to decide whether or not to buy their equipment, a period beginning when the equipment was offered for sale. AT&T may raise prices during that period, but only in three equally spaced installments. The first of those must be eight months after the two-year sales period begins.

Under the FCC's terms, terminals offered for sale on Jan. 1 are subject to increased prices on Jan. 1 and each six months thereafter.

AT&T maintains that it sent a letter that met FCC requirements to its customer premises equipment customers last December. The ICA claims the letter did not amount to a true offer. If the increases are found to have been made outside the tenets of Docket 81-893, the FCC can order refunds or take any of several other options that would serve to negate the charges.

Bell Request Silenced

In another regulatory ruling, the U.S. Court of Appeals for the Seventh Circuit said no to the Bell operating companies' request to offer competitive customer premises equipment and enhanced services without setting up separate subsidiaries. The decision upheld an earlier ruling by the Federal Communications Commission.

All of the regional Bell operating companies, with the exception of Ameritech, had filed waiver requests for permission to offer protocol conversion within their regulated, local packet-switched networks.

CXC's Rose Buds

Just when everybody was wondering where it was and whether it actually existed, the CXC Corp. Rose Business Communications System surfaced.

The fourth-generation private branch exchange (PBX) was demonstrated by Western Union, Inc.'s Government Systems Division at the Armed Forces Communications and Electronics Association show.

The new switch was showcased as part of Western Union's Vega system for government agencies. The Vega configuration features seven different types of data terminals, facsimile machines and computers connected to the Rose via a standard RS-232 connector located in the back of the Rose user interface, dubbed the Personal Teleterminal.

Personal computers that were linked with the PBX included devices from IBM, Wang Laboratories, Inc., Sperry Corp., Digital Equipment Corp. and Compaq Computer Corp.

Edward Cohen, division vice-president for Western Union's Government Systems division, said of the Rose's performance: "It went like gangbusters. It couldn't have gone any better as far as I'm concerned." Cohen's division is marketing the switch in an OEM basis to governmental agencies.

Straight Talk on PBXs

Once in a while, it is helpful to step back and take a look at some numbers. International Data Corp. (IDC) has recently published a report on private branch exchanges (PBX), entitled "PBX," which does just that.

A lot has been said and written lately about the growing amount of data being switched through PBXs, but how much data is there? The IDC study estimated that 82.6% of all the PBX lines shipped in the U.S. in 1983 were used for pure voice transmission. Beyond that, PBX lines with integrated voice and data capabilities represented 13.6% of 1983 total line shipments, and 3.8% were for pure data transmission.

The preponderance of voice lines comes as no surprise, but the projected growth of voice and data lines for the future is notable. IDC said that by 1988, 32.8% of the total PBX lines shipped will have integrated voice and data capabilities, and the percentage of pure voice lines will decrease to 62.1%. By 1988, pure data lines will increase modestly to 5.1%

What this shows is solid, if not spectacular, growth for the makers of voice and data PBXs. But with growing competition from local-area network manufacturers for the lucrative data market, it will take a tough competitor to survive any shakeouts and hold on to market share. It does not seem likely that many new firms will be able to jump in and compete against established companies like Northern Telecom, Inc., Rolm Corp. and Intecom, Inc.

The jury is still out on Ztel, Inc. and CXC Corp., but according to the IDC report, newcomer NEC America, Inc. is coming on strong, at least with the regional Bell operating companies. The report shows that NEC has struck deals with Ameritech, Bell Atlantic and U.S. West for sales of its Neax 2400. Ztel and CXC have inked contracts with only one regional Bell operating company each.

In "PBX," IDC predicts a "classic" shakeout, citing the demises of Datapoint Corp. and Rockwell International Corp. and the fact that low-end PBX technology and features are becoming standardized, "creating a commodity product with smaller profit margins due to increased price competition. Manufacturers are expected to utilize more indirect channels of distribution, including retail outlets, to lower sales costs in marketing the low-end PBX."

Firms Put Foot In Shared Services Mart

The movement toward shared tenant services, or telecommunications-enhanced real estate, gained more momemtum recently when three more companies lent their imprimaturs to the budding service.

Honeywell, Inc. announced its venture at the Building Owners and Managers Association convention in New Orleans. Users will reportedly be able to access not only their buildings' telecommunications system, but also its central computer and control equipment on a shared-cost basis.

Although available services will depend on whatever systems already exist in the buildings, data and voice communications products include telephone workstations, personal computers, private branch exchanges (PBX) and local-area networks.

Services are said to include access to teleconferencing centers, on-site telephone service and least-cost routing of long-distance calls. Custom security and access control systems will be offered.

Honeywell will form a partnership with the building owner or developer and maintain on-site offices. The partnership will service equipment, train equipment operators and expand tenants' custom systems when necessary.

The other company making its entry into the field is United Business Network, which was formed by United Business Communications, Inc. as a comprehensive, private, shared-use telecommunications network.

The network will reportedly feature videoconferencing, distributed PBX features, long-distance services, phone equipment and instrumentation and electronic mail, among other options.

The first United Business Communications private network, Olympianet, is presently going into operation for Olympia and York's 23 buildings nationwide.

The real estate firm Doric Development signed an agreement with Intecom, Inc. to purchase its IBX-T PBXs and announced a joint venture with Pacific Telecom to provide the PBXs to Harbor Bay, a 425-acre business park in the San Francisco area.

IBM Cable System Gets Rolm Stamp of Approval

It should come as no surprise that Rolm Corp. has put its stamp of approval on the IBM Cabling System. The telephone equipment manufacturer, 22% of which is owned by IBM, will bid, install and maintain the controversial cabling plan. It began accepting customer bid requests for installation last month.

Nonetheless, Rolm will maintain its standard three-twisted-pair cable and offer the IBM Cabling System for those that request it. Rolm has tested the system with its full range of products.

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AT LARGE

KATHERINE HAFNER

Compression Popularity Slow to Grow

Some new technologies are already old. **Data compression** appears to be a case in point.

Hailed not long ago as a revolutionary way to transmit more data over slower speed transmission lines, data compression — or compaction — has yet to gain a wide customer following.

Data compression devices increase the throughput of transmission lines by using a compaction algorithm that sends data without altering modems or line arrangements.

There are few companies that sell nothing but data compression equipment. These companies include Chung Telecommunications, Inc. in Palo Alto, Calif., Kinex Corp. of Largo, Fla., and Symplex Communications Corp. of Ann Arbor, Mich.

Chung was formed two years ago by David Chung, a Shanghai-born scientist who developed a proprietary data compaction algorithm.

Chung runs the company with his wife, May, who explains the technology as follows: Using the algorithm, or algebraic forumula, data is studied and then recoded so that it takes on a shorter information content than regular data communications, where text is transmitted over the phone line exactly as it is entered.

Chung makes products called the Turbomux and Turbomux-2 for the 1,200 bit/sec modem market. It is also developing a Turbopacket for the higher end market that the company claims would triple the data that can be transmitted over 9,600 bit/sec and 14.4K bit/sec modems.

May Chung claims that business is "good," and that its biggest customers include large distribution companies as well as companies with many branches, such as food chains and large department stores.

But many industry analysts remain wary of data compression. "I just don't think the user is as excited about data compression as the press or the marketing manager would like to have you think," Charles Robbins, director of communications services at International Data Corp. in Framingham, Mass., said.

"At the high end, it has been positioned as a product that gives users an alternative to a 14.4K bit/sec modem," be said.

"But do users really want that? Do they want 14.4 at all? We are not finding tremendously heavy growth in the 14.4 market," he continued.

Stand-alone data compression devices, such as those sold by Chung and Symplex, are also relatively expensive and their cost can cancel out the savings they bring.

ALAN DAVID HOPKINS

May Chung readily admits the machines are costly. "In order for the machine to study a message, it needs to have a lot of intelligent electronics," she said.

"And not only does it have to examine the data, but it must also generate a procedure by which to recode the data efficiently," she added.

Still, Chung claims, the savings in repeated phone line costs stands in the user's favor.

"The more and the faster you can talk over a shorter period of time, the less expensive the conversation."

It is almost a foregone conclusion by now that requests for service from AT&T Communications will be met with long, frustrating and costly delays.

But we have caught wind of an uplifting story about a recent **installation move** that went so smoothly as to dumbfound the most impassioned of pessimists. The tale might serve as a harbinger of hope for those of you dreading future dealings with the discombobulated telephone company.

This April, the telemarketing group at Dennison Computer Supplies, Inc., a subsidiary of Dennison Manufacturing Co. In Norwood, Mass., moved its headquarters three miles down the road to another building in the space of one weekend.

In telecommunications terms, this meant moving an AT&T Dimension 400 private branch exchange with 70 extensions, as well as 30 Wats and other access lines.

In addition, it involved the coordination of four separate telephone companies: New England Telephone, AT&T Information Systems, Inc., AT&T Communicatons and MCI Communications Corp.

The move began on a Friday, ended on a Sunday and proceeded without a hitch.

According to David Lustig, telecommunications manager for the divison, the move took two and a half months of planning.

"We set a date for two and a half months and stuck firmly by it," he said.

"We chose a date that was far enough out for everybody to get their paperwork done," he added.

The key to the move's success, Lustig said, was a combination of careful planning, a slew of consultants and constant communication among the companies involved.

"You have to understand that this move required the dedication of more than just financial resources," Lustig said. "It required much more time and energy than it would have before [AT&T's] divestiture. We authorized overtime like crazy, and I stepped back and let the consultants and the [telephone companies] hash it all out," he recalled.

Another key to the move's success, Lustig said, was "coordination at high levels." The president and vice-president of operations were even present the day of the move.

Lustig's advice? "Plan ahead. Get the individual phone companies involved in group meetings.

"They won't talk to each other by themselves, but if you get them in one room, you can get them to coordinate with each other," he said.

Lustig is coordinating another move planned for August 17. This one should be even easier, he claims, because it involves "just a couple of data lines."

Speaking at a press conference during last month's National Computer Conference in Las Vegas, IBM President John Akers was something less than forthcoming on IBM's future plans for its controversial **local-area network.**

In fact, he was downright uncooperative. When asked why his company was lagging behind the competition with its local-area network, he replied: "Why is a product or series of products not ready? It's simply that the individuals that are working on those products have not completed their work sufficiently." Oh.

He was more helpful later in explaining why IBM announced that its local-area network is still two or three years away from delivery.

"As to IBM's intent in the local-area network future, the rumoring was enormous. If we were to continue to say nothing, there is an intellectual position that says 'Good old IBM is saying nothing, and people are waiting for them,' " he said.

"If IBM says what it can say, and that is what we did, people can know exactly what they will get from the IBM company," Akers added.

"They can either choose to proceed with all the alternatives available to them, or they can choose not to, but at least they are as informed as they can possibly be from IBM. And it seems to me that is the responsible way for a company to conduct itself," he continued.

Before he finished, Akers cleared up a long-standing industry misconception about his Brobdingnagian employer.

"To suggest that the IBM company dwarfs the industry is really silly. We may be the largest, we may be a leader, but there are a lot of other wonderful companies in this industry, and it's a worldwide industry.

"We don't dwarf anybody to the degree that the industry dwarfs us," be concluded.

Hafner is senior writer for Computerworld On Communications.

WASHINGTON, D.C.

ALAN PEARCE

Cable Wins, But Lacks a Full House

Cable scored a smashing victory over the telephone companies when the Industry pushed H.R. 4103, the cable deregulation bill, through the House of Representatives Energy and Commerce Committee.

The major question now, however, is: Does the industry have the time, the political strength and the unity to get the bill through the final stages of congressional action and up to President Reagan for his signature before the November elections?

If the cable Industry has its way — and if it remains united — the answer is yes.

If the telephone industry has its way, the answer is no.

Surprisingly, the local telephone companies are being aided and abetted by a major segment of the cable industry itself. This segment claims that the franchise renewal process and rate regulation of basic cable services pose serious threats to the industry that cannot be tolerated in legislation. As a result, Century Communications has filed suit in California alleging that the National Cable Television Association (NCTA) has acted in restraint of trade and has violated members' First Amendment rights in striking a compromise deal with the League of Cities in order to get H.R. 4103 through the Energy and Commerce Committee. This illustrates the lack of unity in the cable industry.

Despite the potential roadblocks, cable's convincing victory in the Energy and Commerce Committee is almost without parallel.

Although Committee Chairman Rep. John Dingell (D-Mich.) is regarded by many as a friend of city and state regulators, the version of H.R. 4103 that left his committee is more than fair to cable.

Most of the major provisions of the bill are pro-cable, which is a tribute to a successful lobbying campaign headed by retiring NCTA President Tom Wheeler and his successor Jim Mooney. The provisions include:

- The Federal Communications Commission's (FCC) telephone company and cable cross-ownership rule is legislatively mandated not long after the FCC was seriously considering dumping it. The rule states that telephone companies cannot own cable systems in their monopolized local areas.
- In the event that telephone companies want to get into the cable industry in their nontelephone areas, which is permitted under current FCC rule, they can only do so if they get a franchise from the city authorities. Such franchise awards would be held under intensely competitive conditions with much public scrutiny. As a result, the telephone companies may be unduly handicapped in the cable franchising process.

GREG WENZEL

- Cable services are redefined to make it impossible for telephone companies to build facilities that can be leased to companies such as Home Box Office (HBO). As a result of this redefinition, telephone companies are prohibited from going to program producers and offering telephone company facilities as alternative delivery systems to cable.
- Telephone companies can build cable facilities in their monopoly telephone areas, but they can only lease them to those providing full cable service.
- Neither the states nor the FCC can regulate cable as a common carrier. If cable companies continue to offer only cable services, they cannot be regulated as stringently as local telephone companies. If cable offers telephone services or two-way data services, the states and the FCC can decide to regulate those services.
- Renewal guidelines are clearly spelled out.
- Access channels for public, educational and governmental use are subject to negotiation with cities. Leased channel access for video only is subject to a complicated formula regarding the number of channels to be made available and their cost.
- Cable's emerging video competitor, the Satellite Master Antenna Television (SMATV) industry, won one and lost one with H.R. 4103. The win is embodied in a clause in the bill that says cable operators do not have the right of access to multitenant buildings if "other technologies" provide equivalent programming. The report language accompanying the final version of the bill is expected to clarify any confusion.

The loss concerns a clause saying that the states can develop regulations governing SMATV that are consistent with the FCC's minimal regulations.

A major ommission from the bill concerns the activities of AT&T in the cable Industry. AT&T and cable ownership are not specifically mentioned, which means that AT&T can only buy into the cable industry or begin cable operations once the seven-year moratorium embodied in the Modified Final Judgment ending the antitrust suit runs out.

AT&T can, of course, apply for a waiver, but it is unlikely that U.S. Federal District Court Judge Harold Greene would allow that, especially since both cable operators and newspaper publishers would strenuously oppose such a move. There is nothing in the bill, however, that prohibits AT&T from entering joint ventures with cable companies.

Opposition to the bill continues to intensify following passage by the Energy and Commerce Committee.

The most vigorous opposition is coming from five major forces — the local telephone companies, state regulators, a segment of the cable industry, public interest groups and some major city mayors.

Since the local telephone companies have the most to lose, their plan appears to be to kill the bill rather than amend it.

The anti-telephone company language in the bill has its basis in the economic theory that says a monopoly, such as a telephone company, has the incentive to cross-subsidize other business activities using those revenues derived from its monopoly service. Under these conditions, cable operators say, the cable industry would never have been allowed to develop as a separate competitor to the telephone companies.

These same anticompetition, cross-subsidy arguments also apply to other rate base-regulated utilities if they plan to enter the cable business.

For their part, the local telephone companies, which have been increasingly inept at convincing Congress that they deserve greater business flexibility following the breakup of AT&T, must convince legislators that they are confronting an increasing array of local bypass competitors. Since local distribution of telecommunications services is becoming competitive, the telephone companies must argue that they be allowed to compete fairly and perhaps even be permitted to develop bypass options, including cable.

They must also convince Congress that the FCC's cross-ownership restrictions are no longer justified.

The most surprising threat to the bill's future is from a segment of the cable Industry itself. Cable has always had the ability to shoot itself in the foot, in part because of the entrepreneurial and combative character of the industry and in part due to the regulatory and financial problems that it is currently facing.

It is clear that the cable industry cannot yet let down its guard, largely because of the stiff opposition to passage of the bill.

If the cable industry is to prevail, it must steadfastly support Mooney, its new leader in Washington, D.C. Any sign of weakness or dissension in the ranks will be exploited by those who have everything to gain and nothing to lose by moving cable legislation into the next Congress.

Cable's smashing victory before the House Energy and Commerce Committee could amount to nothing if the telephone industry, aided by the states and a segment of the cable industry, unites to derail the bill as it moves through the final stages of congressional action.

Time is on the side of cable's opposition.

Pearce is president of Information Age Economics, Inc., Washington, D.C., and a regular columnist with Computerworld On Communications.

BY BOB WALLACE

VIDEOTEX MOVES

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OUT OF THE HOME

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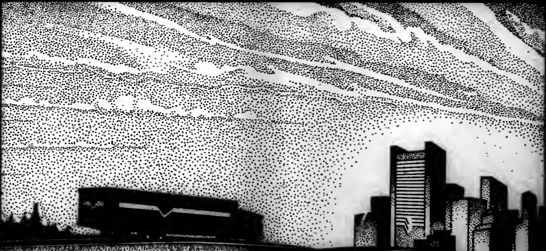


action. "Although there has been a lot of publicity about the Knight-Ridder and the Times-Mirror home videotex systems, the real action will be in corporate videotex," said Martin Lane, director of videotex planning for Link Resources Corp. in New York.

Experts agree that many videotex vendors have focused their efforts on packaging this technology as a new information system designed for use by the corporate sector. These information systems are currently referred to as private, in-house videotex systems. "There is a ground swell of interest in corporate applications of videotex," commented Brian Dugan, vice-president and director of videotex for the Gartner Group.

"[Digital Equipment Corp.] has no real interest in the consumer market; its focus is the corporate market. IBM's initial focus is in the corporate market as well. These companies see a more immediate return in this area," Lane added.

Many vendors are seeing their videotex systems used by companies to provide their employees with an inexpensive medium for the rapid dissemination of timely information. Curt Anderson, videotex marketing programs manager for DEC, points to the low costs and brief period of time involved with printing and distributing company manuals, indexes, newsletters and schedules as a prime incentive for the purchase of DEC's VAX/VTX system.

At the Videotex '84 conference in April, DEC, AT&T Information Systems, Inc. and Honeywell, Inc. unveiled a variety of hardware and software videotex products. These announcements served to promote videotex as a viable corporate information system. DEC led the way, introducing a trio of videotex software products. According to Lane, DEC's host hardware is the choice of most European corporate videotex systems.

Lane said that the DEC announcements were "indicative of the path that videotex will follow." He added that "Link anticipates that IBM will announce a full range of videotex software products designed to run on its systems in early 1985."

Dugan explained, "The novel feature of the IBM and DEC offerings is that they converge on the concept of the personal computer as the videotex workstation." The AT&T and Honeywell videotex systems, however, are based on the use of a dedicated terminal. The AT&T Information System's Sceptre terminal consists of a wireless keypad and a controller unit that, when connected to a standard television set and telephone, transform the terminal into a videotex data base access system. Honeywell offers both a television-connected terminal and a stand-alone terminal that features a CRT display.

The advantage of the IBM and DEC videotex systems, according to Lane, is that they will let potential users take advantage of their installed base of user terminals, therefore eliminating the cost of purchasing additional hardware. Some feel that AT&T and Honeywell, by founding their videotex products on the dedicated-terminal concept, have limited their products' chances of acceptance as corporate information systems. "Dedicated terminals are not going to make it in videotex anymore. Unlike the dedicated terminal, the personal computer is a fait accompli," Lane said.

In trying to decide which type of videotex system to procure for his corporation, a management information systems (MIS) manager is faced with several important decisions. "You must first make sure that your application is suitable for a videotex environment," warned Lane. "Since with videotex you are spreading a small amount of computing power over a large number of users, you do not want videotex for an application that requires a lot of calculating or manipulation of data.

"The primary consideration is whether or not you can use your existing user terminals for videotex," he added. The MIS manager must decide on either a videotex system based on the dedicated terminal idea or one founded on the personal computer concept. Choosing the former means that the dedicated terminal,. unlike a personal computer, will not be capable of performing tasks other than videotex, whereas choosing a personal computer-based system will allow potential users the advantage of performing additional computing functions when not in the videotex mode. "Ideally, you would like to buy a terminal that could be used for more than one application," Lane said.

The MIS manager must then decide what applications the videotex system will be required to handle. Videotex applications are generally either alphanumeric or require some kind of graphics capability. According to Lane, "the overwhelming majority of possible corporate videotex applications do not require graphics."

Alphanumeric applications are generally written in Ascii code. Since there exists a proliferation of traditional black and white, nongraphics Ascii terminals in corporations, systems such as DEC's VAX/VTX stand to become popular. Examples of alphanumeric videotex applications include newsletters, schedules, manuals, indexes and bulletin boards.

Many corporate videotex applications stand to benefit from the use of graphics. This has led to the development of the two dominant standards for the encoding of graphics: Prestel, developed by British Telecom, and the North American Presentation Level Protocol Syntax (NAPLPS), AT&T's upgraded version of the Canadian Telidon protocol. The NAPLPS standard was accepted in February 1984 by the American National Standards Institute and the Canadian Standards Association as the North American standard for encoding videotex graphics.

The major difference between Prestel and NAPLPS is that Prestel's less complex color graphics utilize alphamosaics, a technique that uses small blocks of color to form mosaic patterns. NAPLPS, however, allows its users the ability to compose high-resolution, detailed drawings using alphageometrics, a technique that implements lines, arcs and points to form near-picture-quality patterns. Applications featuring any type of charts, maps, graphs or product designs would require that the system have some type of graphics capabilities.

Although there has been much talk concerning the advantages of corporate videotex systems based on the Prestel, NAPLPS and other standards, many industry spokesmen believe that videotex's initial penetration will be in the Ascii market. "An Ascii-formatted videotex system would take advantage of existing Ascii terminals and data bases," reasoned Gary Arlen, president of Arlen Communications, Inc. "For the next five years, most corporate videotex applications will be Ascii or Ebcdic.

"The battle is really between NAPLPS and Ascii. It will be a long time before NAPLPS is as strong as Ascii because of the availability of NAPLPS software adaptors for personal computers," Lane said. In comparing Ascii to NAPLPS and Prestel as a vehicle for introducing videotex to the corporate masses, Arlen said, "People are willing to try the Model T instead of the souped-up Porsche." ■

Pacific [illegible]

Pacific Bell [illegible] videotex system [illegible] Pac, in January [illegible]

Info-Pac [illegible] [illegible] located in San Francisco and L[illegible] Angeles.

[illegible]

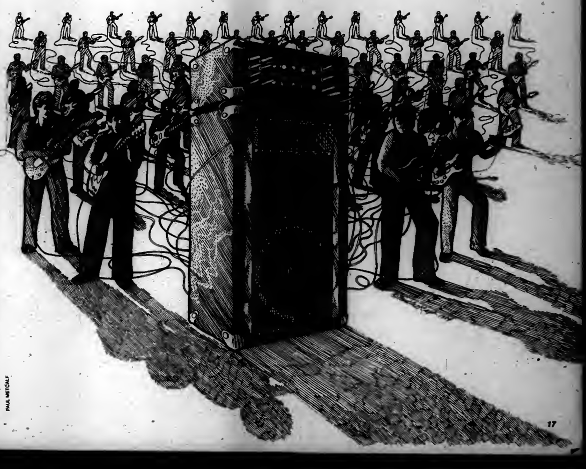
MICRO-TO-MAINFRAME HARMONY

BY WAYNE BENOIT

The most pressing issue before today's information processing industry is the distribution of information between mainframe computers and personal computers in the corporate environment. This has been caused, at least in part, by the ever-increasing distribution of tasks to personal computers, without a corresponding distribution of related information. Managers at all levels in the corporation are making business decisions in an increasingly competitive environment. They must secure the information required for their decision-making processes and then analyze their alternatives. Microcomputers provide these managers with an invaluable information analysis tool, but often they do not provide the data to be analyzed.

Indeed, information stored on mainframes that is essential to a manager's analysis is often difficult or impossible to access. The controlled distribution of this information will, in large part, determine the quality of these managers' decisions and thus the relative success ▶

Benoit is vice-president, product planning and development, Linkware Corp., Waltham, Mass.



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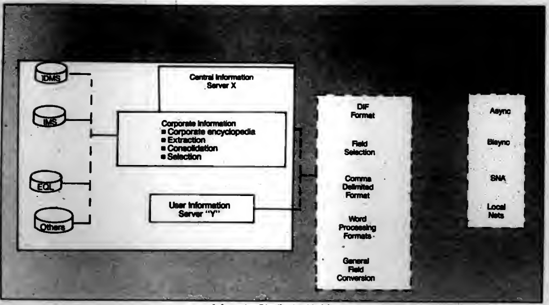


Information Distribution Model

of their corporations. In addition to the information retrieved by users from mainframes, information critical to corporate decision making and operation is now being generated on distributed personal computers. A consistent and secure method must be found to harvest this information.

What functions would be required of a product responsible for the information servicing of personal computers within the corporate environment?

To determine this, consider the tasks a typical office worker performs. Office workers may need financial data to feed a spreadsheet application or mainframe data base information to create a report. They might even need to download a copy of a standard applications program and run it on a personal computer. The ideal information distributor will be able to handle any information request. Limiting distribution requests only postpones the inevitable requirement. Consequently, the personal computer-to-mainframe information problem consists of five distinct functions:

- Information access;
- Information control;
- Information transformation;
- Information transfer;
- Customization facilities.

In most large companies, corporate data resides on one or several large computer systems in a variety of formats. To obtain this data, office workers must ask mainframe programmers to extract it from one or more sources, including various data bases, indexed files and sequential files. This process is expensive, time-consuming and hopelessly backlogged. Interactive access methods must be provided to manage efficiently the information demands of the personal computer user without compromising or corrupting the data.

Interactive access is complicated since corporate data is managed within a variety of applications and data base management systems with varying security levels. In most cases, the necessary information cannot be accessed by non-management information systems (MIS) personnel, and MIS directors are reluctant to change these access methods. Corporate information is often too sensitive to be made available to all users. MIS needs a central information control point in order to regulate access.

Once controlled access is allowed, the information requested may not exist in a usable form. Information transformation may be necessary on a field, record or file basis to allow designated applications to process the data. This transformation will be required so that popular off-the-shelf applications, such as Micropro International Corp.'s Wordstar, can use the extracted data.

When both controlled access and the necessary transformation are provided, transferring the data between the host system and the personal computers presents difficulties. One means of data transfer is the International Standards Organization's (ISO) Open Systems Interconnect model, but this has not been fully implemented. There are several methods used to connect users to computers, including asynchronous and binary synchronous transmission, the X.25 interface and Systems Network Architecture. The ability to connect workstations with different host computers via these different networks is necessary for information transfer and control in a distributed environment.

In most organizations, unique information distribution requirements exist that can only be handled by the organization. These needs will require programmatic interfaces not typically provided by commercial information distribution products. In these instances, components of the information server would be desirable to generate quickly a consistent but unique application.

Using this functional road map, it is possible to determine what the components of a personal computer-to-mainframe link should be (see figure above).

The first component in the link is the interactive access and extraction function. This should be a rich set of features to provide the MIS group with an interactive extraction facility. This facility should support multiple data sources and allow the end user dynamic access to corporate data without MIS staff involvement. It should be centrally controlled to provide an information administration function on the host system, allowing only authorized information access to remote users.

The product should allow access to varied data base products as well as standard sequential and indexed sequential files, using the same access vehicle. Information gathered this way should be placed in an information server to prepare for user interaction.

Information control should be supported using a virtual server concept. This approach is implemented by designating special places within processors on the network as information control points. Maximum control is thus provided, since each area is supported by a server. The information control function should ultimately support the use of several types of virtual servers, including file servers, terminal servers and transaction servers.

Access to the information server should be controlled by extensive security mechanisms. In addition, the server area should support a set of utilities to select, encrypt, consolidate, transform and sort information. For billing and control purposes, a log of all transfer activity should be maintained, with each transaction to the server logged to an accounting file.

Once the information is placed in the information server, the personal computer user should be able to modify that information using a standard set of functions. Applications at the personal computer level often require data in a particular format, and this requires that fields or records be modified before the designated application on a remote computer can process it. This data transformation capability should also be able to reformat output from a personal computer application so it can be used by a host application system. The more formats that can be transformed, the more useful the system is.

The transfer function should bring together the information present in the information server and the task that requires it. This can best be accomplished with a communications system based on an open architecture, such as that defined by the OSI, and the use of virtual servers distributed on the network.

A layered architecture provides the optimal micro-to-mainframe link. Layers can be modified and enhanced easily without affecting layers above or below, making upgrading easier. This approach would allow computing machinery to communicate over a variety of networks via an application-to-application message exchange and therefore enable different types of personal computers to use resources, share programs and exchange data with the host system.

IN THE TYPICAL model, servers may be located at each mainframe and personal computer on the network, with multiple levels of servers located at the mainframe to handle the needs of the large number of different types of information requirements.

This particular structure then could be used for all types of information transfer between different types of computer system components. It need not only be used for personal computer-to-mainframe transfer.

If a virtual server technology is used, the server should be built out of a set of modular building blocks. These blocks should include a network machine interface, a network task interface and utility modules that perform specific utility functions for the personal computer user, such as encryption, transformation, selection, consolidation and control.

These modules should be removable for use by organizations that are in the process of creating their own server applications.

The network machine interface would incorporate the bottom four layers of the OSI model (physical, link, network and transport) and should be responsible for establishing communications between two machines — for example, between the personal computer and host mainframe.

This interface should be portable to a variety of different machines on the network.

THE NETWORK task interface would establish communications between two logically separate processes or tasks. It would incorporate the upper three layers of the OSI (application, presentation and session layers) as functionally defined by the ISO. The processes or tasks could reside in the same machine as well as different machines in a network. These tools allow the construction of servers for particular user tasks.

Servers might include a tailored file server, spool server, transaction server and terminal server.

For example, a terminal server could require two functions: to act as a gateway to Mainframe A and to act as a protocol converter. Therefore, it would require a network machine interface and a transformation utility.

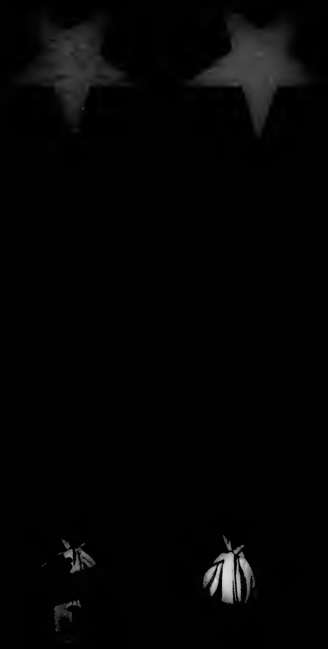
In this personal computer-to-mainframe application, each machine would have a server consisting of task and machine interfaces and a transformation utility.

This modular concept would allow for tiers of servers. A personal computer should be able to send a request for information to mainframe A's server via its server. The mainframe discovers that the information actually resides in Mainframe B, so it sends the request from its Mainframe A server to Mainframe B.

Mainframe B extracts the information and sends it back to the personal computer over the same path. This entire process is transparent to the user, who only knows that he received the information he requested.

It is apparent that this modular architecture can provide many solutions to specific communications needs, allowing large corporations to manage effectively information stored on different types of computer systems within both complex or simple networks.

The MIS director implements only those pieces he needs now, but he can add more pieces as those needs change. ■



she worked her way from legislative aide for two Missouri representatives to chief of staff for Sen. Robert Packwood (R-Ore.). Packwood's activity in telecommunications-related legislation sparked Dawson's own involvement in the field and her eventual move into a decision-making role. After serving as advisor to a person of influence but possessing no ultimate power herself, Dawson said she felt ready to "be in a position to make decisions myself, and I was fortunate to work for a senator who appreciated that."

> ***To see Dawson in action is to witness a woman of disarming candor. While her opinions are strong, her manner is democratic and her mind remains open.***

She was a bit reluctant to leave the fast-paced sphere of policymaking for what was then considered a sleepy, independent regulatory agency. "But I felt the issues we are facing in telecommunications are issues that are really shaping society over the next several decades," she said.

A self-described chain-smoker and perpetual coffee drinker, Dawson dislikes talking with people from behind her desk: "It creates an artificial barrier." She claims to do her most productive work while seated on a sofa at the other end of the room from the formidable desk.

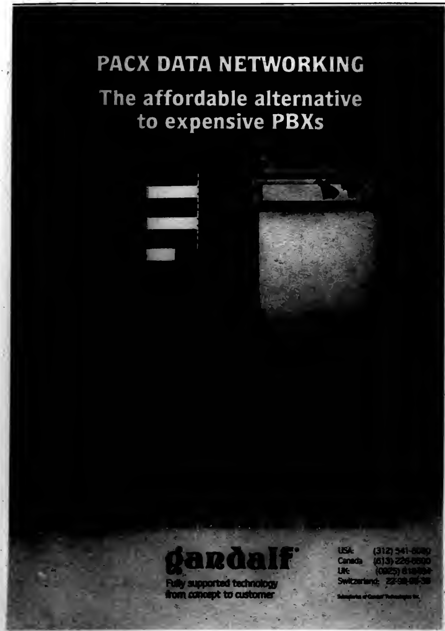
In stark contrast to the sterility of the desk's end of the room, Dawson's working space is strewn with ashtrays, open folders, loose papers and stray coffee mugs. It is from this spot in her office that she holds forth in occasionally intense but most often relaxed discussions with her staff members, FCC attorneys, other commissioners and outside visitors.

Dawson airs her views as freely in the commission hearing room as in the privacy of her office. To see her in action is to witness a woman of disarming candor. While her opinions are strong, her manner is democratic and her mind remains open.

When Dawson arrived at the FCC, the agency was in an extreme state of flux. In August 1981, the Justice Department's antitrust suit against AT&T was settled. At that point, the FCC joined U.S. Federal District Court Judge Harold Greene in overseeing the divestiture of AT&T and its 22 local operating companies. Both Dawson and FCC Chairman Mark S. Fowler, who joined at roughly the same time, were brought on to a commission of seven, which was then pared down to five.

When Dawson arrived, there was a woman, Anne P. Jones, already on the commission, making Dawson the fourth in a succession of women serving on the FCC. In Dawson's estimation, the precedent set by a history of female commissioners helped her to adjust to her position. In particular, Jones helped the young commissioner adjust to life as a female FCC commissioner. These days she appears, if not quite jaded, then certainly well accustomed to being the only woman on the commission.

When asked to reflect on being female in a predominantly male industry, Dawson responded facilely at first. "I think that I probably receive more



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bouquets of flowers than the male commissioners." Then her face turned serious and her answer changed. "I think there are some people who are still in the process of not having to deal with a great number of women in positions such as this. Someone might take a male commissioner out and play tennis or other kinds of traditional male get-together sports. I get flowers. But I think that is fine. It doesn't offend me.

"I get tennis games, too," she added quickly, "but only after making it known that I enjoy playing tennis."

On the whole, Dawson believes, times have changed sufficiently that women in positions such as hers no longer face much antipathy, or even subtle sexism, from male colleagues. In addition, she sees opportunities growing at a rapid pace for women in the communications industry.

"Telecommunications is becoming a booming field for women," she said. "When Anne Jones was here, we initiated a conference for women in telecommunications. The field gives women a wide range of nontraditional opportunities. For example, today we are seeing more and more female entrepreneurs and engineers."

As active as she is in promoting women in the field, if Dawson views herself as a role model at

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all, it is in a much broader sense that crosses specific gender lines.

"I spend a lot of time with young women beginning their careers. But I am not sure that the role model is necessarily a sexist phenomenon," she said. "I think people have people they look to and say there is something about that person they find attractive."

If Dawson's calm demeanor ever diminishes, it is at the mention of the controversy surrounding the AT&T divestiture. To the many detractors of the AT&T breakup, Dawson's replies are firm. "I think critics of the divestiture are dealing with what is happening today," she said. "The role of this agency is to make sure that the American people have a choice, whether it is video, data or voice. That is, we look to that ultimate terminal in the home. If you take that macro view, you can look at divestiture and assume it is a good decision.

"I think the jury is still out on divestiture," she continued. "I can tell you from a theoretical, macroeconomic perspective that it may have been an appropriate decison, or a positive policy decision. But I don't know what that means for Mr. and Mrs. Jones in Omaha, Neb., yet."

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As Dawson sees it, one of the most pressing issues before the commission in the next several years is what she calls competition vs. the efficiencies of an integrated, enhanced network. "Finding the appropriate mix is a very difficult policy decision," she said.

Dawson lets it be known that she is no friend to many of the regulatory restraints that have been placed on the regional Bell operating companies, and she is brutally frank in her assessment of the separate subsidiary requirements placed on the regional companies. "I was not terribly fond of the separate subsidiary requirements," she said, "at least for customer premises equipment. I think we have to do a little bit more looking on the enhanced services side."

Those requirements stemmed from the FCC's 1980 Second Computer Inquiry, which Dawson views as a regulatory response to technology. "In fact," she added, raising her eyebrows, "maybe it is not an appropriate response anymore."

If Dawson sees herself in the grip of a mission, it is that of a regulator who deregulates. In a general sense, she characterizes what she does as "exit regulation."

"As the government is exiting a marketplace, the biggest challenge is how to exit while creating a level playing field. How you do that will make a great difference to the public and to the entrants and to the ultimate expansion of technology and the availability of products to the public," she commented. "These are very difficult questions. They're questions of technology, of equity and speed of service. For any regulator, it is most important to keep your ultimate overall perspective constantly in mind. It is very easy to get caught up in the issues of a particular case."

In its present state, Dawson believes the FCC is entering an era that demands an unprecedented breadth of knowledge. "It is not enough anymore for the commission to understand the telephone business," she said. "We are in a different world. And there needs to be an education process."

When the FCC is faced with the particulars of a case, Dawson said, she would like to see more direct contact from the parties involved. "I don't think that I have ever had [parties] come in and ask if they could brief me on how they function, how they operate and all of the other technical aspects," she explained.

"It has been up to us to move out and try to find that information. We are in a completely new environment. It would not be inappropriate for people to come to us and explain what they see as their role in that environment." ■

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Special Section Teleconferencing

ANYONE CAN DO IT

By Virginia A. Ostendorf

Teleconferencing in the U.S. has evolved into a variety of modes — audio, audio-plus graphics, still video and motion video. Recent studies indicate that audio conferencing or telephone meetings account for 90% of all the teleconferencing that takes place today.

Analyzing the acceptance of audio conferencing within typical organizations may prove helpful. Those implementing new systems seek applications with the greatest potential for user acceptance.

Until recently, the emphasis in teleconferencing has been ▶

Ostendorf is president, Virginia A. Ostendorf, Inc., Littleton, Colo.

A surprising finding is that teleconference use does not spread through an organization because of one successful application. Users are not evangelists. They tend to pigeonhole the use for one specific application. In 95% of the Kellogg client base, business users schedule their own calls with no tracking of usage by their companies. This pigeonhole use of teleconferencing goes unmonitored.

on the hardware, with aggressive equipment vendors driving the market. But within the past year, many potential users wishing to implement systems have changed their emphasis to one of needs analysis.

Audits of internal communications patterns and the identification of corporate applications now precede the selection of equipment.

Kellogg Conferencing Service, in Littleton, Colo., provides interconnection of telephone conferences to more than 250 regular clients. An analysis of this client base reveals identifiable user characteristics.

Company size is not a reliable indicator of teleconferencing acceptance. Although most published case studies emphasize the Fortune 500 users, the Kellogg client base revealed that audio users cover the spectrum from small businesses to giant conglomerates, with usage equally distributed.

The most common characteristic is dispersed geography. Companies that do business from a number of regional offices, serving clients across the country or around the world, are the best candidates for audio conferencing acceptance.

Clients rarely achieve rapid growth in the use of teleconferencing without top management endorsement. This is not to say that chief executives are the chief users. Almost universally, middle managers and technical specialists teleconference most frequently. However, in organizations encouraging use from the top down, implementation is hastened.

Most audio conferences are held on an ad hoc basis and tend to be issue-oriented. A problem or project is tackled by a team of people who may be geographically separated. Calls are scheduled by the project team until the task is completed. It is common to observe great activity — many calls in a two-week period — and then a dramatic usage reduction until the next issue arises. Of regular Kellogg clients, 75% fit this pattern.

Another type of short-term usage is best illustrated by a brief case study. The regional office of Allstate Insurance Co. is located in Englewood, Colo., and serves several Western states. For the past three years, Allstate has used audio conferencing to motivate and reward its sales staff through a fall sales promotion.

For nine weeks, two simultaneous conference calls are scheduled once a week. Two teams of seven to 10 sales personnel dial in and report their weekly sales. Successful sales techniques are shared, and the weekly reports are logged.

This teleconferencing use is part of a yearlong sales contest. Ironically, these Allstate sales personnel are competing for a vacation travel award using a medium often touted as a travel replacement.

Equally effective, although less frequently used, are recurring calls. Similar to regularly scheduled face-to-face meetings, these teleconferences are reserved for the same day and time all year. Participation is fairly constant. Sales staff on the road merely dial into the meeting from any location.

Cobe Laboratories, Inc. offers a successful example of this type of conference. Headquartered in Lakewood, Colo., the company designs, manufactures and markets medical products used in open-heart surgery and the treatment of kidney disease.

Each Monday at 2 p.m. Mountain Standard Time, five regional sales managers in five states dial into a teleconference. Information exchange includes updates, problem solving and training information. The weekly telephone meeting lasts between 20 minutes and one hour. The parties dial in from any convenient telephone, usually from a hotel, airport or hospital public telephone. The established day, time and telephone number for the call enable the managers to plan their appointments around the weekly meeting. Cobe managers cite the reduction of repetitive personal calls as a major benefit of sales teleconferencing.

Applications of audio conferencing fall into two general catagories — business meetings and teletraining. Usage records tell us that business meetings of the type described earlier make up the lion's share of calls, or 85%. Teletraining, the delivery of group instruction, accounts for the remaining 15% of all calls.

Looking for Advice? Ask Experienced Users

What lessons can be learned from experienced users? For a firm wishing to implement a successful teleconferencing system, a great deal can be learned.

1. *Conduct a needs analysis.* Do not delegate teleconferencing solely to the telecommunications department. Instead, use a team approach, including representatives from many areas of corporate life. Gain top management support of this early effort. If a consultant is to be employed, choose one who uses teleconferencing to manage and conduct his own business. Determine the most appropriate mode for the applications that you have identified.

2. *Select equipment.* Let the telecommunications manager be the point man, but include the entire team in determining necessary features, capacity and price.

3. *Identify the in-house advocate.* Determine where the responsibility for teleconferencing will rest in the organization. Choose a manager with the interest, time and personality to follow through. If desirable, place technical maintenance with the telecommunications manager and system advocacy and training in the user ranks.

4. *Develop operating procedures.* If you are planning to have an in-house interconnection capability, consider the following questions:

- How will calls be scheduled?
- Will service be operator-assisted or automated?
- Will there be senior priority or first come, first served use?
- Keeping in mind time zones, what hours will the service be available?
- How will usage be tracked?
- How will the evaluation be handled?

5. *Train users.* Only after the system is in place should you train users. Provide both skills training and equipment training. Use the system to conduct the training. By so doing, you will take the trainee from the theoretical to the concrete in the most painless manner possible.

6. *Provide ongoing support, training and monitoring.* Be sure that new employees know about the system. Help users identify new applications. Reward your superstars. Evaluate what you are doing and continue to make it better.

By following these simple steps, you can join the ranks of successful teleconference users. Learn the lessons offered by experienced users and you will soon be telling others of your own success.

— *Virginia Ostendorf*

Teletraining refers to the delivery mode, not the content of the classes. Examples of teletraining applications are professional development classes, academic degree programs and technical updates.

Although the number of calls used for teletraining is only 15% of the total, the hours of actual use, known as line/hours, are closer to 30%. This can be explained by the fact that teletraining classes usually average more locations per call and often last longer than business meetings by telephone.

The most successful example of corporate teletraining is at United Banks of Colorado. This holding company consists of 28 affiliate banks, a data processing subsidiary, two insurance companies and a finance company. Total staffing exceeds 3,500 persons, located throughout the Rocky Mountains. Driving time to the Denver headquarters can exceed eight hours each way in good weather. Winter conditions frequently make travel impossible.

Since October 1982, this innovative financial organization has conducted a variety of traditional business meetings by teleconference. For the last 18 months, the bank has discovered the benefits of teletraining for new product marketing. A typical class links 12 to 14 banks and more than 100 people in a 90-minute class session. Employees to be trained range from tellers to bank presidents, depending on the topic.

United Banks of Colorado now conducts four to six teletraining sessions per month, in two to three topic areas. Recently, marketing training introduced the "Product of the Month" series.

A SURPRISING FINDING from this study is that teleconference use does not spread throughout an organization because of one successful application. Users are not evangelists. Instead, they tend to pigeonhole the use for one specific application or need. In 95% of the Kellogg client base, business users schedule and conduct their own calls with no tracking of usage by their companies. This pigeonhole use of teleconferencing goes unmonitored and unnoticed. The rest of the company remains oblivious to the value of this technology.

Although this study does not identify users by job classification, some general user characteristics are apparent. Marketing and technical project managers are the best user prospects. Sales and quality control functions use the medium well. Corporate trainers are just beginning to accept teleconferencing as a delivery mode

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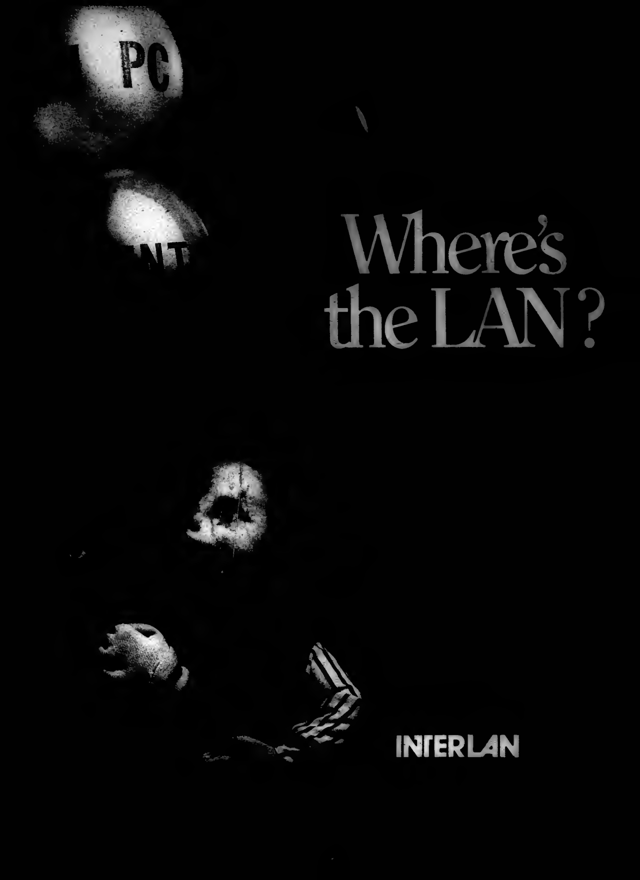

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and they make up a small percentage of regular users.

Users are rarely from the telecommunications department. In general, telecommunications managers do not use teleconferencing to manage their projects. A company's teleconferencing success is rarely driven by the telecommunications manager. Yet, in many corporations, sole responsibility for research, equipment and implementation of teleconferencing is in the hands of the telecommunications department.

How do most successful users get started? In many cases, the first exposure to teleconferencing is initiated by an equipment or service provider. A demonstration call is planned and conducted with the vendor's help, and the content is restricted to a discussion of the concept of teleconferencing or the specific hardware that is being demonstrated.

A significant factor is the long period between the demonstration call and the actual first business usage. It is common for a prospective user to wait between nine months and one year before initiating his first teleconference. This long period has been verified with other service providers and manufacturers of teleconferencing equipment. The overnight success is uncommon in this industry.

> ***When the client finally decides to conduct a teleconference, it is often because of a crisis. An urgent communications need arises; the parties are unable to arrange a traditional meeting; and teleconferencing is the only viable option. Someone in the organization remembers the demonstration call and realizes its applicability. Almost apologetically, the new communications mode is attempted.***

When the client finally decides to conduct a teleconference, it is often because of a crisis. An urgent communications need arises; the parties are unable to arrange a traditional meeting; and teleconferencing is the only viable option. Someone in the organization remembers the demonstration call, realizes its applicability and has a name on file to call for assistance. Almost apologetically, the new communications mode is attempted. As unlikely as it may seem, this scenario is commonplace.

DESPITE ITS UNEXpected nature, the crisis teleconference has one big advantage. Often the participants are members of top management. In a very visible way, teleconferencing is perceived as a benefit by senior executives.

What is the effect of user training on acceptance of teleconferencing? What type of training is most beneficial in hastening acceptance?

As mentioned earlier, equipment vendors got the credit for most teleconferencing introductions in past years. For the most part, training provided by vendors has been limited to equipment mastery — assembly, operation and troubleshooting. Often a user is provided a user manual and a brief, face-to-face, hands-on session. This is the traditional training received by the majority of users.

I introduced another type of training in 1979. Classes conducted by audio teleconference teach planning, protocol and discussion techniques unique to audio conferencing. During an on-line class session, students identify appropriate applications from their own business lives. Questioning techniques and undesirable methods are demonstrated and discussed. Agendas are developed and analyzed. Human factors and meeting skills are stressed instead of equipment.

Comparing the usage of those receiving skills training and those receiving equipment training reveals a distinct difference. By a significant margin, skills-trained users host more teleconferences than other users. Frequent usage occurs sooner, and teleconferencing remains a favored communications option among those with skills training. Finally, skills-trained users are able to identify a broader variety of teleconferencing applications in their professional lives than their equipment-trained counterparts. ■

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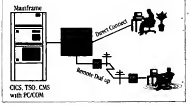

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Special Section: Teleconferencing

MARKETING

By Polly Rash

Communications satellites, in their 40 years of development, have become crucial in our planet's telecommunications infrastructure.

Satellites today relay 60% of international telecommunications. More than 100 communications satellites are now orbiting the earth or are planned for the near future.

Video teleconferencing is one of the brightest services made available by satellites. It has been claimed that teleconferencing saves travel time and allows more people to participate in conferences and workshops than ever before. Most important, there ▶

Rash is director of marketing, Services by Satellite, Inc., Washington, D.C.

is new interest in teleconferencing's ability to increase human productivity.

Teleconferencing has a bright future, particularly as a business tool. Sorting out the market potential for video teleconferencing involves a little bit of research, some background and experience in the industry, the ability to look into a crystal ball without getting a mouth full of ground glass and possibly a whole lot of chutzpah, since there have been so many predictions in the past about teleconferencing that have yet to be realized.

Sorting out the market potential for video teleconferencing involves a little bit of research, the ability to look into a crystal ball without getting a mouth full of ground glass and possibly a whole lot of chutzpah.

On the other hand, who predicted a few years ago that thousands of white-collar workers would be seated in modular cells hunched in front of CRTs all day long? Who would have predicted that cellular technology would allow us to use our office while traveling at 55 miles per hour on the way to work?

According to James Ruehlin, a computer programmer for NCR Corp. in San Diego and an observer of the current computer conferencing scene, "Computers started with batch processing, and it was easy to get used to that. It took us about 20 years to get interactive on-line processing. Yet with

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videoconferencing, we have it all, all at once. It is full-motion; it is color; it is sound; it is alive; it is interactive; and it is instant."

According to Ruehlin, corporate culture shock exists. "Companies and people need time and successful experiences to get used to this new way of doing business." He said that the next few years will provide that time.

There are five basic types of teleconferencing. The first type is simple audio conferencing. Audio conferences are accomplished by calling your telephone company to set up a conference call or by using one of the many bridge services available.

If graphics are added to the simple audio conference call, such as text transmission or an electronic blackboard or writing tablet, the result is called an audio-plus or audiographics conference.

The next step up in complexity and cost is called slow-scan, captured-frame or freeze-frame conferencing. This type of conferencing uses 56K bit/sec telephone lines to transmit a single picture to a receive location.

TV cameras and monitors pick up and display information. The picture is "refreshed," or changed, every seven to 90 seconds, depending on the speed of change needed and the cost of the equipment. It is a bit like looking at overhead projections or 35mm slides as a speaker gives a presentation. A second telephone line is used for the audio portion of the conference.

The fourth type of teleconferencing is computer conferencing. The proliferation of personal computers is bringing an enormous expansion of computer conferencing. Computer conferencing includes such features as bulletin board, personal notepad and management reports that can be written by more than one person working from more than one location.

THERE ARE FOUR levels of computer conferencing. In the first level the conference is totally private. Only you have access, and it is a one-to-one relationship with your teleconference counterpart. The second level of computer conferencing involves controlled access so that more than one person may participate, but on a controlled basis.

On the next level of conferencing, one originator can deliver simultaneous messages to many recipients, or multiple messages are sent to one central area and comments are added by individuals, one by one. Finally, global computer conferencing is like the bulletin board at your local grocery store: Anyone with a computer has access.

Computer conferencing, unlike other types of teleconferencing, is asynchronous. Computer conferencing does not require the recipient of the message to participate live while the message is being sent. Messages may be picked up, and the conference continues at the sender's convenience.

While other forms of teleconferencing require verbal skills, computer conferencing requires written skills.

[redacted]

Computer conferencing will help the development of networking as a new management style. In traditional corporate pyramids, control is exercised at the top. Networks, on the other hand, have no top and are open to all ideas.

Computer conferencing will help the development of networking as a new management style. In traditional corporate pyramids, control is exercised at the top. Networks, on the other hand, have no top and are open to all ideas.

Networks are possible in large organizations that rely on electronics, such as computers and phones, to communicate. The idea is that management is opened up and the top-to-bottom

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structure is broken up.

This concept of networking as a management style has made the most headway in hardware-oriented, spread-out companies. Desktop computers and phone lines are used, as are electronic mail, teleconferencing and remote computing.

Electronic networks are used to send memos and policies, make requests, ask for ideas, consolidate incoming information, reach decisions, lay out future planning and design new products. This type of network offers a chance for an employee to cut across the organization and to move innovation through the corporate structure. This may be a use of computer conferencing that enthusiasts did not predict several years ago, but there is no doubt it is taking place today.

The fifth and most talked about, most written about and most expensive type of teleconferencing is full-motion videoconferencing. This type can be divided into two subgroups: special event or ad hoc networks and dedicated or corporate networks.

Special event networks are set up by associations, companies or organizations interested in getting a message from one originating point to many points around the U.S. or the world. There are networking organizations that specialize in the complete process of client consultation, production of the video show and networking all the multiple receive sites.

Dedicated networks, on the other hand, are usually located on corporate or associated premises, and they can be used informally for half an hour or an hour to conduct a meeting between Point A and Point B to solve a specific problem or to replace routinely held meetings involving travel.

Three sales must be made for corporate videoconferencing to succeed. First, the concept must be sold to top management. This becomes more important as the cost increases. Second, the telecommunications manager must bless the deal. And finally, the users must agree to try teleconferencing.

During this third step, things can break down in a corporation. The market for teleconferencing will never be realized as long as teleconferencing rooms are designed with an extremely high-tech look and are therefore intimidating to low-tech users. The market for teleconferencing will never be realized as long as the teleconferencing room that everyone is urged to use is located right next to the office of the chairman of the board and lower-level employees are intimidated by entering the carpeted executive suite.

Teleconferencing will never take off in corporations as long as using the room itself is more complex than using a telephone. Buttons, dials and lights are not what most executives want in a teleconferencing room. Simplicity, ease of use and good audio are what first-time users are looking for in a dedicated teleconference room.

Four recent studies indicate that healthy growth is ahead for all types of teleconferencing. Quantum Science Corp., Future Systems, Inc., Frost and Sullivan, Inc. and Creative Strategies International, Inc. have all made recent projections on teleconferencing. Each of the four organizations predicted a healthy growth for the industry. Quantum Science said that the number of teleconferencing rooms used by corporations and associations will triple between 1983 and 1988. Frost and Sullivan predicted that revenues of teleconferencing providers will jump 800%, from $370 million in 1983 to $3.4 billion in 1992.

OF THE FIVE TYPES of teleconferencing, the prediction indicated that audio-plus — or audiographics — and full-motion dedicated networks will be the biggest winners. Audiographics conferencing was projected to increase to a $1-billion industry in 1990, and video teleconferencing was projected for $600 million in 1990. Full-motion teleconferencing was projected to have a 620% growth between 1983 and 1988 in the U.S. alone.

Three years ago, there were similar predictions about the expected marvelous growth of teleconferencing, particularly video teleconferencing. Somehow, these predictions did not come true, and many teleconferencing product and service suppliers are still waiting for those bright days to come. Several factors combined to slow the growth of teleconferencing in the last few years, and among them were the 1982 recession, airline deregulation and the insistence within the telecommunications industry that teleconferencing was a substitute for travel.

Instead, teleconferencing provides executives, managers and professional staff with more of their two most precious commodities: time and communications. Video teleconferencing is a corporate weapon, a corporate asset, not just a cost displacement. Therefore, teleconferencing provides an increase in productivity more than it offers a substitute for the travel dollar.

There is no research yet on how video teleconferencing really affects the way we do business. We do not know yet who really is benefiting and in what ways. We are not sure where the growth markets are, who is buying and what the nonbuyers are doing.

Today's teleconference users, particularly those stepping up to the corporate dedicated network arena, will soon have answers for us based on their own personal experiences.

Those wildly optimistic forecasts of three years ago may yet come true three years from now, once the real and provable benefits of increased productivity are realized and documented. ■

INTERNATIONAL

By Eric J. Novotny

As the teleconferencing market grows in the U.S. and elsewhere, it is expected that the growth will include applications across national borders. National public teleconferencing networks and private, intracorporate networks can benefit greatly by having international extensions to their domestic systems. While time zones do narrow the overlap of business days, transcontinental distances certainly work in favor of teleconferencing. But are there any appreciable differences in services, technology or applications when teleconferencing goes international?

The answer is that there are substantial new challenges ▶

Novotny is director, Market Research and Service Development, Communications Satellite Corp., Washington, D.C.

in designing and implementing an international teleconferencing network, arranging for an international teleconference event and interconnecting national teleconference networks. Before looking at some of the differences, however, it is helpful to survey briefly how international teleconferencing is done today.

Three major types of teleconferencing networks are involved. First, there are private teleconferencing networks, usually dedicated to a closed users group. Typically, such networks have their teleconferencing terminals or rooms in corporate offices that are then linked by international leased lines or even by dial-up lines. There are examples of private teleconferencing networks whose use is occasionally loaned to outside parties; this is not yet common practice internationally. Regulations in some countries limit the extent to which leased communications lines can be shared or resold to third parties

A second type of teleconferencing network would use the so-called public room. In this case, the telecommunications administration in a given country has its own interconnected teleconferencing rooms that can be scheduled for anyone desiring to pay for a teleconference. An example of this system would be AT&T's Picturephone Meeting Service in the U.S., or the Confravision network operated by British Telecom in the UK. In some cases, such public rooms can be privately owned and operated, such as the Intelmet service of Intercontinental Hotels and Comsat General Corp. Using the Interlink international service of Satellite Business Systems and British Telecom facilities, the teleconferencing rooms of the International Hotels in London and New York are linked. Customers book the rooms in half-hour increments.

The third major type of teleconferencing network involves special events. Both the private and public examples usually involve dedicated terminal equipment and often dedicated telecommunications links designed for business meetings of small groups. Gatherings of large audiences, such as conventions, conferences, shareholders' meetings and so on can use teleconferencing for presentations by remotely located speakers or even to link remote conference sites together.

In such instances, equipment is usually installed especially for the event with temporary telecommunications links ordered for its duration. For hotels or convention centers that also have facilities for small meetings via teleconferencing, it is also possible to share the same links for special event teleconferences in large auditoriums.

At the international level, the types of teleconferencing are similar to those familiar in domestic applications: audio, audio-graphics, freeze-frame video and full-motion video. Private and public networks often employ a mixture of these. Today, audio and audio-graphics applications that employ voice-grade communications can be established by temporary dial-up links into the public-switched telephone networks of the countries involved. When more than two points are connected, one location usually serves as a hub to bridge the remaining points together. For most applications, establishing such networks is only a matter of ensuring compatible equipment at each location.

Among countries that share a common border, teleconference links can be established using the terrestrial cable of microwave facilities, although distances and bandwidth requirements may make satellite facilities preferable. Even in densely populated areas of the world, such as Western Europe, satellite communications have been used extensively in teleconferencing trials and experiments.

The long-haul needs of transoceanic teleconferencing can also be met by satellite communications and, to a lesser extent, by submarine cable systems. Today, the U.S. handles several teleconferencing events via the Intelsat system using facilities similar to those for other international television transmissions. Other teleconferencing services are provided using dedicated digital links for freeze-frame and compressed video. Presently, all these dedicated wideband links connect the U.S. with the UK, although expansion to several other countries is in progress. Freeze-frame and compressed video are also offered through submarine cable systems between the U.S. and the UK. Analog television transmissions are not available in present undersea cables.

One significant boost to international teleconferencing is the new international business services package offered by Comsat, using the Intelsat satellite system. Designed to operate from smaller earth stations located in urban areas — such as the New York Teleport — or on customer premises, this new service, called Digital Express, makes available digital links from 64K bit/sec up to 2.048M bit/sec from the U.S. to many countries. A frequently encountered obstacle to digital teleconferencing links has been the long lead time and expense of obtaining wideband local connections in each country. The new satellite services are able to leapfrog these problems by bringing the international links geographically closer to the ultimate users of the service. An added feature of significant value to teleconferencing is the availability of these digital links on a part-time as well as a dedicated basis, the former permitting charges for only the satellite time actually used.

International teleconferencing seems to be headed in several directions, all of which can take advantage of these new international communications services. At one level, there will be an increasingly expanding market in linking together public networks from country to country. International extensions to public teleconferencing services can automatically expand a national system of teleconferencing facilities by a significant factor. In this way, each country can expand the use of its system into the others' national markets.

Private teleconferencing networks, extended for international applications, can also enhance their use and value to an organization when coupled with new digital services. While it may not be possible in all cases to justify investing in an international earth-station network exclusively for teleconferencing, it may be advantageous to include teleconferencing along with other private network needs — voice, data and facsimile, for example. Such a scheme could be particularly attractive using part-time bookings for the video link.

In terms of technological developments in teleconferencing, it appears that the market is moving in a decidedly digital direction. Especially for video applications, digital networks offer the cost advantages of bandwidth compression and the security advantages of cryptography.

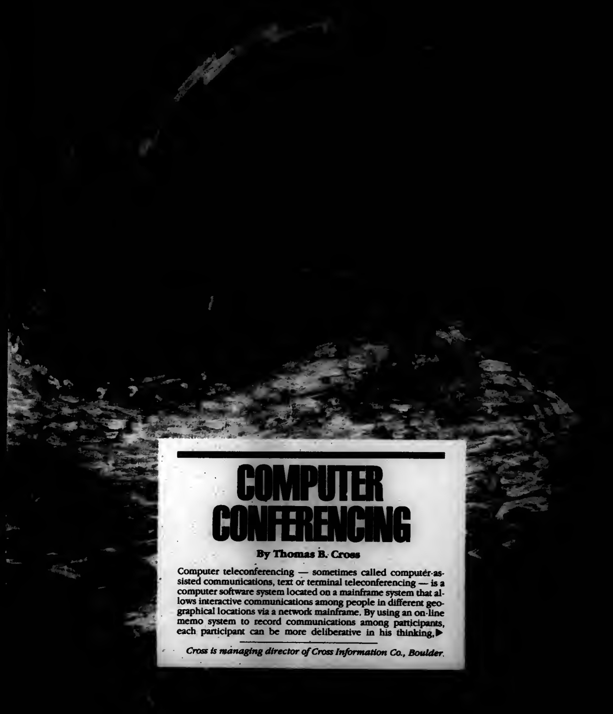
As the industry moves in this direction, some problems will unfold concerning transmission standards and compatibility. There is work underway in various international forums to address standards issues, but definitive standards have yet to emerge in either 1.544M bit/sec transmission, used by the U.S. and Japan, or 2.048M bit/sec transmission, used in Western Europe, for example. Standards issues in analog television have been successfully addressed over the years, and, with pressing commercial needs, there is every reason to expect that agreements will be reached here as well.

At the same time, one must always keep in mind that one or more ends of any teleconferencing network will be under the control of a foreign administration and thus will require mutual agreement on standards and equipment. Designers accustomed to having management and technical control over a national or corporate network do not always enjoy such control in an international application. Choice of equipment, pricing, limitations on use or restrictions on cryptographic systems can complicate international network designs. Dealing with these realities is necessary for succeeding with an international service. Early efforts to identify and resolve such issues are highly desirable. As the market begins to show increasing promise, international cooperative efforts will also be stimulated further.

Perhaps the most promising demonstration of interest and cooperation in international teleconferencing to date was the International Teleconference Symposium (ITS), held in April 1984. Not only was international teleconferencing the prime subject of the conference, but it also had the unique quality of being held in five cities simultaneously — all linked at various times through interactive video links. During designated international sessions, speakers and audiences in Philadelphia, London, Sydney, Australia, Tokyo and Toronto could see, hear and interact with one another. Except for this world session, all the two- and three-way teleconferences used digital video transmissions at 1.544M bit/sec.

In Philadelphia, the U.S. hosted the first commercial all-digital video teleconference with Australia and Japan. Participants could also compare the live performance of four different video coder/decoders.

The ITS conference, cosponsored in the U.S. by the major international communications carriers and Comsat, demonstrated that a high degree of international cooperation is achievable in promoting new technologies and applications of teleconferencing in the world arena.



COMPUTER CONFERENCING

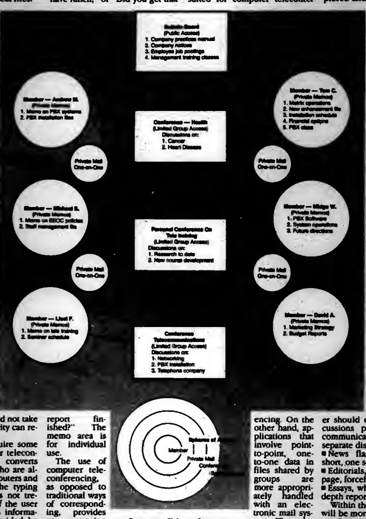
By Thomas B. Cross

Computer teleconferencing — sometimes called computer-assisted communications, text or terminal teleconferencing — is a computer software system located on a mainframe system that allows interactive communications among people in different geographical locations via a network mainframe. By using an on-line memo system to record communications among participants, each participant can be more deliberative in his thinking, ▶

Cross is managing director of Cross Information Co., Boulder.

without the immediate and often demanding pressure found in a face-to-face meeting.

Members of a computer teleconference always have access to complete documentation of their common project. Because this text is machine-readable, it may be searched by keyword, date or source and integrated with the individual user's private text files.



Computer Teleconferencing
Communications Options

The main impetus for the spread of computer teleconferencing may be the possible savings in time, energy and money in gathering large numbers of people in one place at one time. Computer teleconferencing cannot replace the camaraderie and social aspect of face-to-face meetings; however, it does offer an attractive alternative when the main purpose of a computer teleconference is the dissemination and exchange of information.

Not only are time and space removed as critical factors, but the computer teleconference is self-documenting, and each user can compile a complete transcript of it as the computer teleconference proceeds (see figure at right).

People communicate at their best because they have the time to say exactly what they mean to say. Moreover, since the transcript is machine-readable, it can be searched and edited electronically. In addition, when the computer teleconference is over, the transcript can be edited, printed and distributed. Thus, people that did not take part in the original activity can receive transcripts of it.

Because it does require some typing ability, computer teleconferencing will find converts among those people who are already familiar with computers and computer terminals. The typing skill that is required is not tremendous, particularly if the user simply needs to access information that has been provided by others.

An electronic meeting may be structured to permit absolute freedom of access by any member or to restrict entry according to whatever scheme the organizers think appropriate.

In most computer teleconferencing systems, there are four levels of access. These four access levels are:

- Global, for example, bulletin board;
- Limited group access, for example, conference topics;
- One-to-one, for example, electronic mail;
- Private, for example, memo or scratch pad.

This means that everyone has access to the bulletin board, while participation in conferences and discussion topic areas is limited. Electronic mail is useful for short messages. These messages can include questions such as, "Let's have lunch," or "Did you get that report finished?" The memo area is for individual use.

The use of computer teleconferencing, as opposed to traditional ways of corresponding, provides an ongoing electronic filing system for systematic and rapid retrieval of information: an electronic library at the user's fingertips. Most computer teleconferencing systems are like electronic desks that have places for memos, letters, messages, bulletin board and calendar.

Computer teleconferencing differs from electronic mail in that it is structured to fit the specific requirements of each user community.

In addition, the decision to use computer teleconferencing instead of electronic mail, or vice versa, should be carefully considered. This decision should represent a careful matching of group communications dynamics with technical requirements.

Typically, applications that require close group interaction and a historical transcript are better suited for computer teleconferencing. On the other hand, applications that involve point-to-point, one-to-one data in files shared by groups are more appropriately handled with an electronic mail system. The teleconferencing software and the flexibility that permits material to be switched among the various subsystems make computer teleconferencing attractive as a medium for cooperative action.

Computer teleconferencing generates a different type of social interaction than the type that is generated by either audio or video teleconferencing. Formulating thoughts and typing them at a keyboard are, of course, qualitatively different processes than expressing them verbally to a group.

With computer teleconferencing, there is an ongoing interaction. A computer teleconference participant need not respond right away as though on the telephone or in front of a camera. As a result, reflection and precise expression are possible with the use of computer teleconferencing.

In addition, issues can be explored and resolved on an ongoing basis, rather than being allowed to accumulate.

Computer teleconferencing is potentially less confrontational than face-to-face meetings. It also simplifies an inherently difficult task: the ability to reach a consensus among several people in a fairly short time.

Walter O. Roberts, the founder of the National Center for Atmospheric Research, has developed his own computer teleconferencing protocols. According to Roberts, some of the most important concerns include:

- The need to encourage people to practice, as in drivers' education;
- The need to develop a buddy system to share ideas and give support;
- The need to develop a system to overcome the fear of typing;
- The need to establish communications protocols concerning who speaks and when;
- Eliminating grammatical and typographical issues and encouraging the participation of all.

In addition, the teleconference manager should establish separate discussions pertaining to desired communications formats. These separate discussions include:

- News flashes, which involve short, one sentence items;
- Editorials, which involve one-page, forceful opinions;
- Essays, which are structured in-depth reports.

Within the next five years there will be more than 30 million personal computers installed worldwide, with many connected via networks to corporate offices from either the field or offices in homes.

In the office, it is generally known that most professionals spend an average of 20% of their work time on document-related activities and at least 50% of their time in meetings. Desk-to-desk teleconferencing, which was first heralded by AT&T's Picturephone Meeting Service, has become a reality.

The Wang Laboratories, Inc. Personal Image Computer combines an image scanner with the personal computer. In addition, the recently introduced IBM Personal Computer/XT-Video Conferencing Unit allows the users to integrate video with personal computer software.

THIS WILL BRING about major changes in the teleconferencing industry with the emphasis on small-scale, desk-to-desk teleconferencing rather than on the multimillion-dollar video teleconference room. Computer teleconferencing will be one of the key tools used with financial modeling, graphics and word processing.

In addition, teleconferencing will also be paired with decision support systems and artificial intelligence, which are available for managers and executives much faster than ever before.

Computer teleconferencing is one of the easiest technologies to learn because it combines many of the advantages of letter writing with the dynamics and power of the computer. The protocols required for this technology are minor when compared with audio and video teleconferencing.

Moreover, computer teleconferencing will be the most pervasive of the teleconferencing technologies because of the availability of personal computers.

There are several key advantages of computer teleconferencing:

- It does not have any time restrictions.
- It does not have any geographical restrictions.
- It can be provided at a low cost.
- It has self-documenting and filing features.
- It does not require the use of acting or performing skills.
- It features self-pacing and self-training.
- It allows multiple participation in many conferences. ■

> ***Computer teleconferencing is one of the easiest technologies to learn because it combines many of the advantages of letter writing with the dynamics and power of the computer. The protocols required for this technology are minor when compared with audio and video teleconferencing. Moreover, it will be the most pervasive of the teleconferencing technologies because of the availability of personal computers.***

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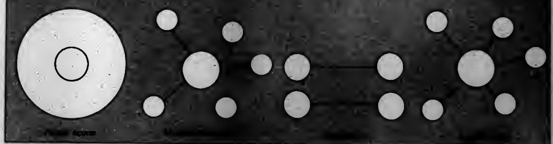

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October

Communications networks are switching to all-digital. AT&T and MCI are using fiber-optic-based transmissions and satellite services. We'll explore how these changes affect users, and what the opportunities are for vendors.

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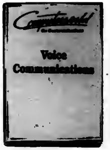
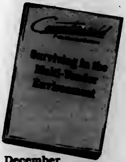


November

Who uses digitized-voice store-and-forward systems? What's the latest on combining voice and data? Telephony has branched out into many sophisticated systems. We'll look at how voice communication is being integrated into the whole communications system.

Closes October 5



December

Almost a year after the AT&T breakup, users have been deluged by companies promising one-stop shopping. We'll look at the dominant vendors, offer guidance on selecting a vendor, and discuss the pros and cons of making a single-vendor commitment.

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THE ROBERT KEIPER VIEW

Robert Keiper has devoted the past 12 years of his professional life to the pursuit and perfection of teleconferencing. That means his career has spanned the effective lifetime of this still little-used technology.

During the past four years, he has consulted with such notable companies as General Motors Corp., General Electric Co., J.C. Penney, Inc., Northrop Corp., American Satellite Co. and Compression Labs, Inc.

A strong advocate of teleconferencing in its multifarious forms, he passionately takes to its defense and quickly points ▶

Robert Keiper

out its successes. In his opinion, the major stumbling block to its widespread proliferation is a general lack of knowledge on the subject. He is starting his own consulting firm to make that point, among many others.

The 49-year-old Keiper lived a dramatically different life before getting involved with teleconferencing. He was an "independent student" in New York, studying such subjects as economics, politics and philosophy.

The real drama in his life back in those days came from Project Liberty, *a one-man play he lifted from his incomplete novel on the American Revolution. Keiper combined the roles of eight actors into one — sometimes played by himself. The presentation was staged more than 2,500 times.*

He is married and has a three-year-old son. On Communications *Editor Bruce Hoard interviewed him recently on videotex.*

Maybe we could start out with you giving us a brief history of teleconferencing.

I suppose that the history should begin with audio conferencing as developed by the Bell System. That goes back about 25 years to the Bell conference-call concept.

It was not heavily utilized and not too many people even recognized its potential, and to a large extent, they still don't. Audio conferencing is still tremendously underutilized compared to what it is capable of delivering.

I became involved in teleconferencing in 1972, when I went with a small company in New York called Telesession Corp. They were doing audio conferencing, but not just to put people together on the wire. They used audio conferences as a means to an end. They did focus on group research and another service they called word-of-mouth marketing, both of which were very powerful and still are. Telesession is still successful and is doing fine work in New York.

What [my experience] taught me was that there are a lot of human factors in teleconferencing that most people could not recognize because you need experience to recognize those things.

And I began to realize that the human factors of teleconferencing were probably the most important aspects of the whole technology.

In fact, it is not even a technological issue. It is a cultural phenomenon. And I think that is why teleconferencing was not heavily utilized when it first appeared in audio form and when it first appeared in video form back during the early [Picturephone Meeting Service (PMS)] days in the '70s.

To a large extent, it still is suffering from the same mispositioning. Most people today consider it to be a technological issue, and they fail to appreciate how important the human element is.

What role did the PMS play in teleconferencing's evolution?

Probably the most important role of all. It brought the possibility of something that looked and felt like face-to-face meeting, delivered electronically, into public awareness for the first time. And that probably was the most important step that was ever taken in the history of teleconferencing.

It made people aware that the technology was at least possible. But even so, it took many years following that initial PMS trial before the concept of teleconferencing began to be accepted in the world.

Tell me a little more about the PMS, exactly how it was created and what happened to it during its existence.

Well, the initial trial period ran for a short period of time. I don't remember exactly — it may have been 18 months or two years or so. There were a number of specific companies involved and the public business was also invited to come in and use it.

What was the time frame?

I would say it was around 1976 — in that area.

Was this a full-motion service?

It was full-motion, and I am pretty sure it was just a straight analog full-motion, with no compression involved, so that the picture quality was fairly good at the time. But I think it was all black and white. A lot of the rate structures that they gave on the thing — the charges — were extremely small compared with the actual cost of sending that amount of signal down the tube.

So the idea was to sell a concept?

Yes, they were trying to see if there was a business place for that concept. They ran the trial and got some good feedback from it, but most of the people that used it tended not to come back.

Why was that?

It is a complicated issue, but I believe that it had to do with the fact that the benefits of videoconferencing are not really appreciated by first-time users. First-time users do not have the context to recognize that teleconferencing can actually deliver totally different benefits from face-to-face meetings. In fact, there are ways in which teleconferencing can actu-

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ally be better than face-to-face. But first-time users tend not to notice those things.

Now, we are mixing up terms here — teleconferencing and videoconferencing. Why do you use those two terms interchangeably?

They are not the same thing, of course. Teleconferencing is a more generic term. But when I said that there are benefits in teleconferencing, I was talking about the whole gamut of forms of teleconferencing. For example, in an audio conference, people tend to be more candid and open than they would face-to-face.

What other forms of teleconferencing are there today?

There is audiographics teleconferencing, when you have audio conferencing and you augment that with some kind of graphics capability between the two sites so that people can share graphics materials of different kinds. For example, you might have two squawk boxes and a [facsimile] machine so that people can send facsimiles back and forth and talk about them at the same time. That would be the most basic form of audiographics conferencing.

In a sense, there is another form of videoconferencing that is sometimes called audiographics. That is called freeze-frame video, where you send one frozen image via a video system at a time. You can send people pictures that way but its most frequent use is for graphics materials.

What about electronic blackboard? How would you describe that?

That is an audiographics system intended to be used in conjunction with an audio conference. The shortcoming of an electronic blackboard is the fact that it is not truly interactive. In other words, the person who is sending the signal is writing on a blackboard-type surface or a white board-type surface, and the picture is received both in his room and in a distant room on a video screen.

So if the person at the receive location wants to make a change on that image, he has to write on a board that is blank and have his image appear overlaid on that screen that is across the way. There are systems now that allow people to write directly on the video screen and have that graphic appear as if they were drawing on that screen. That is truly interactive because then the remote participant would also write directly on the screen and have the image appear overlaid on the image he received.

Are there any other major forms of teleconferencing we haven't touched on yet?

Yes, computer conferencing. It is a major form of teleconferencing that is extremely underutilized. But it is not often thought of in the same terms as the others because it can be asynchronous. That is, the participants can be in a computer conference but not necessarily at the same time. You can enter a computer conference at any point and see what messages have been developed since you were in the meeting last.

Then you can make your comments and pop them back into the computer data base that is shared by all the other participants.

> ***"In terms of the rate of increase of utility, teleconferencing has been a disappointment. But it has been an enormous success for the people who have used it properly."***

Does that pretty well round up the various forms?

Yes, you've got audio, which breaks out into two forms. Point-to-point audio would be with a speakerphone at each location. Multipoint audio can be where you have a group of 20 or 50 or more people all hooked into the same teleconferencing bridge — audio bridge — so that they can all hear each other. Usually, they just use handsets for that. We described audiographics. There is freeze-frame video, full-motion video and computer conferencing. There is one other form that is also a form of teleconferencing. It is like a broadcast. It is called ad hoc or video advance. With that, there is a single broadcast site and that production is sent to a satellite by analog signal and then it is received in multiple receive sites all across the country. This is a good way to get the same message sent to a multitude of locations at once.

At this point, is teleconferencing a disappointment or a success?

It's both. In terms of the rate of increase of utility in teleconferencing, it has been a disappointment. I think we have rounded the shoulder of that curve now, and

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we are headed on a new track of faster and faster acceptance in utility. But it has been an enormous success in terms of what it has done for the people who have used it properly. There have been many occasions when people have put teleconferencing systems in where they were not appropriate and where they had not done a careful evaluation of their requirements. Those systems tend to fail. But when people put the system in where it was needed, the success has been tremendous.

> ***"Somebody who has experience with teleconferencing can go into a company, look at its communications needs and match those requirements to what teleconferencing can deliver. Then the system is designed the way it should be, and the darn thing works. Otherwise, people are shooting in the dark."***

Which people are using teleconferencing systems at this point?
Lots of them. I'm working, at present, with some people at Boeing on some aspects of their system, and they have had tremendous success up there. They connect many of the engineering sites around Puget Sound with teleconferencing and videoconferencing, and they have saved tremendous amounts of money and done a great deal of fine work on the system. Now, they are going to be connecting remote sites around the country.

Other real success stories have been Aetna, IBM — I can list a number of them. At Aetna and IBM, videoconferencing is mostly point-to-point. Johnson & Johnson Corp. used an ad hoc video event right after the Tylenol poisoning to announce its new product, and that video event probably saved Tylenol as a viable product in our marketplace. It did a super job for them and they knew just how to use it and did a tremendous job of putting that together in just a few days.

How expensive is teleconferencing, and what are the factors considered in buying vs. renting facilities?
In videoconferencing, the public room would be the only way you could actually rent equipment. You can go to a [PMS] room or an [Isacomm, Inc.] room or soon there will be [Sears, Roebuck & Co.] rooms around, and you can go to these facilities and use them to talk to a distant location. It is sometimes inconvenient for executives to go across town. But I think the public rooms are going to become more important as time goes by. The cost of putting in a motion facility right now is still quite high. You can spend $300,000 per location for a motion-video system.

But those costs are coming down, and we are also going to be finding that the transmission costs are going to be coming down dramatically over the next 18 months or two years. I think that that will be driving this industry very strongly.

As far as the public rooms are concerned, can you give a price range on what it costs to use those kinds of facilities?
I can give some prices for the [PMS] facilities — they have just recently had a new tariff on that, so I'm not going to be exact on my quote. But if you have two sites — say you're connecting San Francisco and New York — you would pay a $40 setup fee and then $165 for a half hour for the use of the room. Then you have about $650 per hour transmission cost between the two locations.

This is a videoconference, color, full-motion?
Yes, with the voice switching on the cameras, graphics capabilities, lots of bells and whistles.

What aspect of teleconferencing has done the most to spread its popularity?
The success of the users has been its most important aspect. That will play the most important role in the future. Perhaps I should back up. I think that AT&T's advertising campaign for teleconferencing has played a very important role in the spread of the technology. That built awareness, but the people who are using it successfully have shown the way for lots and lots of other people to get aboard. But what they found is that it doesn't replace travel, but it improves productivity tremendously.

What one aspect of teleconferencing has most discouraged potential users?
Probably cost or perceived cost. People see it as expensive, and they are not sure that it is going to pay off. The people who have put teleconferencing in the right place by doing a careful requirements analysis first have found that the payback from teleconferencing has been manyfold the cost.

What form does resistance of teleconferencing take in companies?
I think I should answer slightly differently from what your question asks. Usually, what keeps [teleconferencing] from happening in a company is that there is no real champion of teleconferencing within the company, somebody who can explain what this can do for the company. And the reason that person doesn't exist is that it is very difficult, unless you have a lot of experience with teleconferencing, to analyze a company's potential use of this medium and be able to show the company where the payback might be.

How can a company decide whether or not teleconferencing is right for it?
That is my real field of work. I have been in the consulting arena in this field for a number of years, and the most important work that I've done has been developing requirement studies for companies. This is when somebody who has the experience with teleconferencing can go into a company and look at its communications needs — not its travel pattern but its communications requirements — and then can match those requirements to what teleconferencing is and can deliver. Then the system goes in in the right place; it is designed the way it should be to support the specific, unique attributes of that environment. The proper users are identified and the right kind of promotion is done, and the darn thing works. Otherwise, people are shooting in the dark. Some people have had a great deal of success without using consultants.

How rapidly is the technology improving?
The rate is incredible. The technology is advancing very quickly.

What does the future hold for teleconferencing at this point?
I would say that it won't be long until video teleconferencing, in some form or another, is so common that the word teleconferencing will leave our vocabulary. It will be just communications, electronic communications, but it is just a communications technique. It is going to become so standard that it won't be a fight anymore.

Do you see a day when we will have home-to-home-type teleconferencing?
Not particularly, although that is not impossible. I just don't see a big requirement for that now.

When is a face-to-face meeting more appropriate than a videoconference?
Videoconferencing has proven to be a lot more versatile than anybody used to think. However, there is always going to be the important presentation where you want to get to know the person at the other end better than you can electronically, where you want to take that person to lunch, where you want to press the flesh.

Where those things are vital to the relationship, in a first major presentation, that will be done face-to-face. But all the follow-ups from that point on can be handled with videoconferencing. ■

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THE UBIQUITOUS TWISTED PAIR

BY MARGIE SEMILOF

The capability of twisted-pair wiring is a subject widely debated yet often misunderstood by the industry. The question of whether it is a versatile medium with a future or a dying symbol of telecommunications' yesteryear can only be answered by measuring its limitations and capabilities against potential applications.

As corporate data transmission rates increase, network planners are looking to coaxial cable or fiber optics for transmission. When economics dictate, however, managers are reexamining the uses of the 100 million miles of copper already installed to get more bang for their transmission buck.

Twisted-pair wiring is not a long-haul medium. Long-haul duties are carried out by microwave radio, coaxial cable and satellite. The longest distance for which twisted-pair wiring is commonly used is in subscriber loop carriers. This digital-to-analog system, which covers the distance between the user and the local central office, employs a multiplexing scheme to increase a smaller number of existing circuits.

Twisted pair is still, however, a viable solution for on-premises data networking, easily carrying 1.5M bit/sec for one mile or less and 56K bit/sec up to three miles, according to George Pfister, president of Perspective Telecommunications Group in Paramus, N.J. In the past, however, if a private branch exchange (PBX) user wanted to double up on twisted pair and use it for both voice and data transactions, the bottleneck of high bursts of data traffic could bring the system to its knees. ▶

Semilof is staff writer for Computerworld On Communications.

KRISTIE VANVALKINBURGH

"The question is, what kind of topologies are we looking into? In terms of PBXs, you can get by with 56K bits. That is full bore, smashing data down. Where a corporation now has two on-line 56K bit/sec links, is everybody going to need to talk at 10M bits? Maybe in 1995, but not in the next couple of weeks," Pfister said.

"The switches had originally been engineered for voice," said Tom Willmott, director of user services at International Data Corp. (IDC), in Framingham, Mass. "With new switch designs the situation has eased up, and we can see that twisted-pair technology is not as constricted as we once thought."

Brad O'Brien, a vice-president at Perspective Telecommunications Group, said that twisted pair is handicapped by the signal processing methodology used to drive it.

"Twisted pair is not restricted to either the RS-232 limit or the voice 4 KHz limit," he said. "Those restrictions are primarily attributable to the kinds of signal processing capability that were available when RS-232 was standardized — about 25 years ago. Since then, we have developed more sophisticated circuitry, such as the RS-422 interface. This standard has not been popular but is capable of driving much higher speeds over much longer distances.

"The wire is the same," he added. "The only difference is the kind of signal you have put on it in order to be able to recognize it at the other end."

Unless a workstation uses high-speed applications, such as computer-aided design and manufacturing or video, the cost of installing coaxial cable or fiber optics is not justified, according to Pfister.

"Obviously, you are not going to send 400M bits over twisted pair. Not even 10M bits," said Pfister. "The question is what kind of topologies are we looking into? In terms of PBXs, you can get by with 56K bits. That is full bore, smashing data down. Where a corporation now has two on-line 56K bit/sec links, is everybody going to need to talk at 10M bits? Maybe in 1995, but not in the next couple of weeks."

Much of the older wire under the streets is wideband 19 gauge, compared to the narrower 26 or 28 gauge that is being installed in buildings today, O'Brien noted. "The bandwidth that can be driven on that larger twisted pair is going to be cleaner and purer in its signal quality," he said. "Inherently, 19-gauge wire has less capacitance than the much thinner wire — 26- or 28-gauge — where the pairs are much closer to each other. This high capacitance of the thin wire means higher attenuation and therefore lower transmission performance."

One of the limitations inherent in twisted-pair wiring is its sensitivity to interference.

"When sending your transmission through a wire, you need repeaters where the signal is [illegible] poles.

"The crossover [illegible] with [illegible] to [illegible] ground [illegible] the [illegible]

Since 1940, the phone [illegible] has been [illegible] wire within buildings. On [illegible] outside, the older wire, most of which was 19-gauge, is being replaced.

There are four types of twisted-pair wiring. Multipair is the universal wiring with which most people are familiar.

[illegible] accommodating [illegible] ably up into the multimegahertz range.

— *Margie Semilof*

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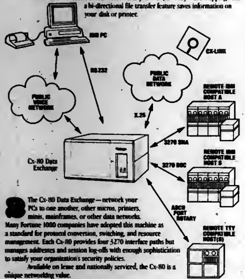

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regenerated and pushed down the line," explained Kim Myhre, communications program manager at IDC. "This can either increase your error rate. or pick up additional information by the time it gets to the receiving end. The more noise you deal with, the more intervention you need. You could get a lot more bandwidth out of twisted pair except for these error-rate restrictions. When you get to higher speeds, it makes its own noise."

Depending on the environment, however, there are precautions that can be taken to keep interference at bay. "The standard answer to interference on twisted pair is that AT&T for some 20 years has been using twisted pair for 1.5M bit/sec on T-1 circuits," said O'Brien.

He added that the problem with any speed is getting the signal to the other end without interfering with the adjacent signals.

"These two requirements are somewhat in conflict," he said. "But you just use precaution where you put those high-speed lines in relation to other high-speed lines as well as the signal generator."

IN ADDITION TO offering inherently less bandwidth than coaxial cable, twisted pair suffers by comparison because coaxial cable also offers more advanced modulation techniques. So, if a workstation has physical or environmental restrictions, is expected to accomodate future multiple-channel communications, uses high-resolution graphics or video, the user will need a higher speed transmission medium.

Willmott noted that the big trade-offs in price and performance of twisted pair will be in building retrofitting.

"With a new building, you can lay in twisted pair, coaxial cable and even throw in some fiber-optic cable in anticipation of your future needs. The bulk of the whole project's cost is in labor anyway," he said. "In an old building, however, to rewire a concrete structure with coaxial cable when twisted pair and some fourth-generation switch would do just as well just doesn't make sense."

O'Brien observed that if a firm were thinking of sticking with twisted pair, it might consider getting some shielded wire.

"You do not have the logistic problems of having to worry about routing these cables, especially when you get close to the main distribution frame," he said.

"Fiber and coaxial cable need a multiplexer. That will probably cost at least $100 per channel. Installed twisted-pair cable is a couple of dollars per foot at most."

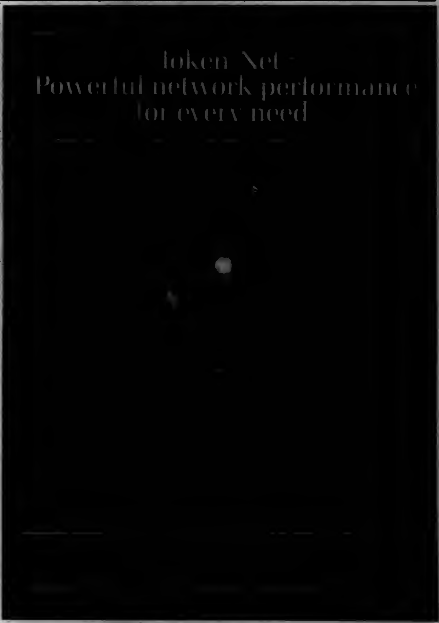
While the omnipresent twisted pair may suit today's needs, Myhre observed that there are a lot of network developers who feel it is dangerous to think in terms of current requirements only.

"There is always a fear that some fascinating technology or capability is going to come along and this entire building full of twisted pair is not going to be able to handle it," Myhre pointed out.

As users continue to push data rates upward, we will start to see new types of transmission media, according to Myhre. One possibility is the type of cabling system recently announced by IBM — a data-grade conductor with twisted-pair wiring outside of the shield.

"That is not telephone wire twisted pair, however," he said. "I think IBM has pretty much endorsed the concept of parallel networking, in that you use one network for data communications and one network for voice.

"I think it will be a piecemeal sort of thing," Myhre added, speaking of future wiring plans. "You are going to see a mix of the media. Application requirements will be based on the type of technology required." ■



THE VENTURE CAPITAL ADVENTURE

BY KATHERINE HAFNER

TOM BARRETT

particular company and its product, which he will only go so far as to describe as a "high-priced development system."

As a company that is a bit off the beaten track, it is clear that it is no sure winner.

This explains his colleagues' skepticism.

"If this were just another disk drive company, it would be easy," he said.

"But it is an extremely esoteric part of the market, with a total market of 50 — or 500. And it is hard to understand. So others have rejected it," Wolff continued.

The venture capitalist spent 15 years working in the telecommunications industry before joining Rothschild Ventures.

He is intimately familiar with communications technology and is therefore something of a precious commodity in the business.

When he discusses the company currently under scrutiny, he underscores the fact that knowledge of the technology is essential in evaluating the company.

As singly obsessed as Wolff seems to be with this company at the moment, however, venture capitalism breeds very short attention spans, and in just a matter of weeks, this venture will be a fact of the past for him.

If Rothschild goes with it, its fate will unfold in any number of ways.

It could turn out to be the one of five ventures that will do extraordinarily well; it could be in another category of companies that will balance out in the end; or in the final analysis, it could turn out to be a complete and utter washout.

The burgeoning telecommunications industry has become ripe ground for venture capitalists looking for some sound investments. When a telecommunications start-up company is a success, it is quite often a resounding success.

According to the *Venture Capital Journal* in Wellesley, Mass., more than $400 million worth of investments were put into telecommunications companies in 1983.

The fastest growing segment, according to the *Venture Capital Journal*, is data communications networks companies that manufacture communications hardware and software.

Such data communications companies represented 17% of all the financing in 1983 that went into the telecommunications industry.

Another rapidly growing segment is telephone systems, equipment and services, which in the past year represented 26% of all financing for the telecommunications industry.

Since McGill joined Rothschild Ventures, the number of communications start-ups that the company invests in has increased to the point where communications comprise well over half the firm's total investments.

Wolff is quick to point out that while the process involves an abundance of guesswork, it is not like playing craps. "It is an informed, multisensory conclusion based on many things. It is an optimistic skepticism."

"Since I have gotten bere, communications has dominated our portfolio," McGill said.

"We look at it as one of our best investment opportunities," the former president of American Bell explained.

Wolff estimated that his company receives between 15 and 25 requests for capitalization each week.

The proposals come from a full range of high-technology-related entrepreneurships.

"We actually had one guy write in once to ask us to invest $1 million to bring high technology to Kansas," Wolff said.

"He said he needed the check quickly. We sent a polite rejection letter," the venture capitalist explained.

Of course, investing capital in start-up companies is fraught with risk, and Wolff is the first to admit that.

"Of course, what all institutional venture capital companies want is a company for investment that has a patent position on a product that takes ten cents to produce and sells for a dollar and has a shelf life of 100 years," he said. "But in reality, no business is that good."

When Wolff examines a company, it is a process of mixing facts about a prospect and more elusive characteristics.

"It is complicated. You cannot write formulas. A lot of it is intangible," he pointed out.

Some of the more tangible considerations, the venture capitalist pointed out, can include price performance, management, marketing methods and competition.

Wolff is the first to admit that investing capital in start-ups is fraught with risk. "What all venture capital companies want is a company for investment that has a patent position on a product that takes ten cents to produce and sells for a dollar."

"As for the intangibles, it can be the chemistry you observe or the chemistry you have with them," he said.

"It sounds corny, but small things can mean a lot," he explained.

Wolff is quick to point out that while the process involves an abundant amount of guesswork — and "there are no facts in the future" — it is not like playing craps.

"It is an informed, multisensory conclusion based on many things," he said.

"It is an optimistic skepticism. The idea is that you have to be enthusiastic, but you also have to be skeptical as hell," he added.

Euan Malcolmson, a partner at Chatham Venture Corp. in Lexington, Mass., says that, as a venture capitalist, he looks to back a group of people that has a product or product idea for which the market could turn out to be extremely large.

"It is risk capital, there is no doubt about it," he said.

"If it goes bust, we write off our investment," he continued.

At a certain point, Malcolmson explained, it "definitely becomes a hunch. And that is a hunch based on how we perceive the ability, the motivation and the drive of the [chief executive officer].

"He may have a good product idea, but it is uncertain whether that is the product for the market. You never know until you take it to market," Malcomson said.

In many cases, those who venture into the financing of communications companies are dealing with a technology that is not yet widely accepted and in some cases not yet heard of.

One such enterprise that received venture capital five years ago from Chatham Venture has established itself as one of the world's foremost voice messaging companies.

VMX, Inc. in Richardson, Texas, was formed in 1978, when voice messaging was virtually unknown.

Today, VMX is a public company with a market value of more than $100 million.

"Now we are looking at companies that provide a function similar to VMX's, but with a product that will be available for everyone on personal computers in their offices," Malcolmson said.

"That's the marvelous thing about the U.S.," he added.

"There are people willing to take a chance on an entreprenuer who has nothing more than a good idea." ■

Ungermann-Bass Unleashes Interface for IBM Personal Computer Users

Ungermann-Bass, Inc. has introduced a network interface controller that will reportedly connect IBM Personal Computers and selected IBM Personal Computer-compatible microcomputers to its Net/One local-area network system.

Called the Personal Network Interface Controller (NIC), this plug-in board is compatible with other Net/One Personal Connection products.

The Personal NIC offers users the same network capabilities as the company's Personal Network Interface Unit (NIU), according to a spokesman for Ungermann-Bass.

The Personal NIC was designed for use in Personal Computer workstations and executes its protocols in the Personal Computer. It offers high network thoughput by means of its packet-handling techniques, which utilize 12K bytes of receive buffers and 4K bytes of separate transmit buffers.

This network interface controller supports all Net/One media, including standard Ethernet, 10M bit/sec thin-coaxial baseband, 5M bit/sec broadband and 10M bit/sec fiber-optic cable. The Personal NIC also is said to permit the use of the full range of Net/One and Personal Connection software.

The Personal NIC is priced at $595.

When equipped with an optional on-board transceiver for use with thin-coaxial baseband cable, the unit costs $750.

Ungermann-Bass, Inc., 2560 Mission College Blvd., Santa Clara, Calif. 95050.

L-Net Enables Users to Perform Multiuser Applications

L-net, a local-area network that reportedly permits dealers, systems developers and end users to create and customize multiuser business applications, was announced by Logical Business Machines, Inc.

The local-area network, which is based on the Microsoft, Inc. MS-DOS operating system, extends the company's diplomat natural language for multiuser use with record- and file-level locking capability, a vendor spokesman explained.

The network allows users to link as many as 64 microcomputers, share data files and applications programs and pool costly peripherals, the vendor said.

L-net is a linear-bus network supporting as many as 64 workstations connected with a twisted-pair-cable of up to 10,000 feet. It uses a Xerox Corp. Ethernet-like, carrier-sense multiple access with collision detection protocol with a data transmission rate of 2.5M bit/sec, the vendor spokesman maintained.

File server kits for converting hard disk computers are priced at $1,890. The hardware and software that is required to convert a stand-alone micro into a workstation retails between $775 and $1,200, depending on its configuration.

Network repeaters for each 600-ft. extension of the data bus are priced at $615 each.

Logical Business Machines, 1294 Hammerwood Ave., Sunnyvale, Calif., 94089.

Multitenant Service Aid Unveiled for SL-1 Line

A multitenant telecommunications software package that will reportedly enable building owners to offer tenants the advantages of a digital private branch exchange (PBX) was announced by Northern Telecom, Inc.

The Enhanced Multitenant Service for Northern Telecom Inc.'s SL-1 family of digital communications systems offers shared access to trunk routes, integrated voice and text messaging and automatic call distribution, the vendor said.

With this new software package, an SL-1 system can reportedly operate as 32 PBX systems, with each unit having the potential to serve as many as 512 tenant groups. The SL-1 PBX could allow or deny tenant organizations to call one another. It also permits managers to break down billing and management reports by system, tenant organization and extension.

The package will also reportedly allow tenants to share various outside line services such as Wats for routing of voice and data calls. The service also gives tenants the flexibility of sharing their operators to handle incoming calls.

Right-to-use fees will start at $3,484 and will vary according to the model of SL-1.

Northern Telecom, Inc., 259 Cumberland Bend, Nashville, Tenn. 37228.

Timeplex Unwraps Wideband Multiplexer

Timeplex, Inc. has introduced a wideband multiplexer that reportedly performs both statistical and time-division mutliplexing at data link speeds of up to 64K bit/sec. The DTM48 is said to support a maximum of 48 user ports.

The DTM48, when equipped for time-division multiplexing, reportedly offers transparent channels for the transmission of any bit pattern. A resynchronization feature delivers a signal to external encryption devices after detecting a loss of synchronization on the data link.

When time-division multiplexing ports are installed in the DTM48, the primary 64K bit/sec data link can be backed up with a hot spare. If the first line is lost, the unit automatically switches all traffic to the backup path.

The DTM48 is priced at $8,375 for the first unit when equipped with four time-division multiplexed ports, four statistically multiplexed ports and the backup data link. Delivery of the unit will begin this fall.

Timeplex, Inc., 400 Chestnut Ridge Road, Woodcliff Lake, N.J., 07675.

Graphics Tools Out For Apollo's Domain

Apollo Computer, Inc. has announced both a graphics architecture for its family of Domain workstations and a color graphics engineering workstation.

The graphics architecture, named Graphics Metafile Resource, was designed to accommodate emerging industry standards.

With Graphics Metafile Resource, graphics are stored in a Graphics Metafile, which reportedly can be shared among applications and can also be viewed on any Apollo workstation within a Domain local-area network.

According to the vendor, the Metafile is a virtual file capable of storing up to 256M bytes of data, and it is structured for speed. The Graphics Metafile Resource is an editable, tree-structured data base that provides a set of routines that allow the applications developer to build and edit complex models, the vendor said. Graphics data is reportedly stored directly in world coordinates and can be viewed on all Domain workstations.

The Apollo Graphics Metafile Resource is a standard feature on all Apollo Domain workstations and will be included at no extra charge beginning this month.

Existing Apollo customers can acquire an upgrade at no extra charge with the next release of the Apollo Aegis operating system, the vendor said.

The latest addition to Apollo's family of engineering workstations, the DN550, is reportedly compatible with the company's entire family of workstations and software and has the capability of running over 250 existing scientific and engineering applications from more than 80 third-party vendors.

Systems software support for the DN550 reportedly includes Apollo's proprietary operating system, Aegis, and AUX, the company's implementation of Bell Laboratories' Unix System III software, a spokesman for Apollo Computer pointed out.

The DN550, with 1M byte of main memory (four planes of color), a 19-in. color display, keyboard and enclosure, costs $31,500, the spokesman for the vendor said.

Apollo Computer Inc., 330 Billerica Road, Chelmsford, Mass., 01824.

Management Tool Unveiled For Users of NCR Compten 3600

NCR Comten, Inc. announced the Comten Communications Alerting Facility 1 Release 1, a network management and control product that reportedly gives users real-time status and configuration information on communications lines terminated by a Comten 3600 communications processor. The Communications Alerting Facility also gives network operators dynamic control over the alarm, logging and display parameters for their networks.

The unit allows users to establish performance thresholds and parameters for individual lines or groups of lines. It then audibly or visually alerts users when any monitored communications line does not meet the defined criteria.

Users can designate primary network nodes that can access, display or alter any Communications Altering Facility information in the entire network. In multinode networks using the Comten Communications Networking System, users can gather status on up to 15 remote sites by using a single display unit at one network node. Users can also configure remote sites to send status to multiple network nodes, a spokesman for NCR Comten said.

The product consists of a software module, a keyboard and CRT display and an optional line printer. With the optional line printer, users can reportedly log copies of alert messages, the vendor said.

Comten Communications Altering Facility is supported under Comten 3600 System Control Software and can co-reside with other Comten software.

The license fee for the Comten Communications Altering Facility software is $150/month or $1650/year. Purchase prices are $1425 for the Comten T-4050 color display; $714 for the Comten T-4017 monochrome display; and $780 for the Comten T-4032 printer.

NCR Comten, Inc., 2700 Snelling Ave. N., St. Paul, Minn. 55113.

EMS-Telex Enables IBM 370, 4300 Users to Send via Telex

Marc Rubin Associates has announced a software applications package that will reportedly allow IBM 370 and 4300 series mainframes to communicate via Telex and TWX.

The EMS-Telex package allows data stored in the computer to be recalled and sent to remote locations such as personal computers and Telex or TWX terminals.

According to the vendor, the software can be used by virtually any business that has either an IBM 370 or a 4300 series mainframe running CICS data communications software under OS or DOS.

It allows any user of an IBM 3270 series or plug-compatible terminal to extract reports, portions of reports or data from existing software and send them to a remote location.

In an order entry or report transmission mode, the software will permit information recipients to receive a hard-copy output via Telex, TWX or electronic data at any terminal.

EMS-Telex enables the mainframe to hold outgoing Telex or TWX messages, sending them in batches to reduce message unit charges.

Prices for the system begin at $12,000.

Marc Rubin Associates, 16390 Pacific Coast Highway #200, Huntington Beach, Calif., 92649.

Liberty Unleashes DEC-Compatible Tools

Liberty Electronics has unveiled a voice and data communications workstation and a pair of Digital Equipment Corp.-compatible products: a voice and data workstation and a video display terminal.

Liberty's Freedom 212 Remote Information Station reportedly features advanced terminal capabilities, a full-size tilt-and-swivel high-resolution display and a 106-key keyboard with 47 programmable keys. The unit also has an integral Bell 212-A-compatible modem, a built-in 25-line phone directory and an automatic dialer. The workstation need only be connected to a desk telephone and uses existing phone lines, the vendor said. Liberty's DEC-compatible VDT, the Freedom 220, is reportedly VT220, VT100 and VT52 software-compatible. Its standard features include a low-profile 106-key keyboard with 20 programmable function keys. The 12-in. diagonal, nonglare, phosphor screen comes with a 25-line by 80-column display.

Liberty's DEC-compatible voice and data workstation, the Freedom 222 Remote Information Station, is also said to be VT220, VT100 and VT52 software-compatible. The unit features an integral Bell 212A-compatible modem, a 25-line directory and an automatic dialer and is based on Liberty's Freedom 220 VDT.

The Freedom 212 costs $1,295; the Freedom 220 VDT, $795; and the Freedom 222, $1,395.

Both the Freedom 220 and 222 offer an amber screen option for an additional $25.

Liberty Electronics, 625 Third Street, San Francisco, Calif., 94107.

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Compten Unwraps Two Software Tools

NCR Comten, Inc. announced two software products, the Comten Start-Stop 1 Release 5 and Comten Emulation Processing 4 Release 5.

According to the vendor, the Comten Start-Stop 1, when used with other Comten Emulation Processing programs, provides switched- and dedicated-line connection, applications switching, automatic dialing and global and applications-dependent message processing.

The Comten Emulation Processing 4 performs the data-handling tasks between Binary Synchronous Communications and asynchronous terminals and one or more IBM host computers.

Comten Emulation Processing 4 is a no-charge licensed software product. The license fee for Comten Start-Stop 1 is $81/month or $891/year.

NCR Comten, Inc., 2700 Snelling Ave. N., St. Paul, Minn. 55113.

Workstation Permits Concurrent Operations

The Sigma-Data 3200, a workstation for text, data and communications that permits concurrent sending, receiving and word processing by a single operator, has been released by Telecomet, Inc.

The workstation's features include automatic dialing, redialing and timed transmission for telex and direct distance dialing, according to the vendor. It also features alphabetical organization, global search capability and text review by scrolling on the lower screen without disturbing text entry on the upper display.

Other features are a 256K-byte memory, 1.3M-byte disk storage and fully concurrent multiport capability to communications protocols, according to the vendor.

The Sigma-Data 3200 costs $6,900, with volume discounts available.

Telecomet, Inc., 820 2nd Ave., New York, N.Y. 10017.

Multiplexer Operates With Memorex Units

Fibronics International, Inc. unveiled a fixed eight-port coaxial cable multiplexer designed for users of Memorex Corp. controllers and IBM 3274/A local and remote control units.

The Model FM1699 multiplexer operates with the Memorex 2074 controller and all Memorex Category A peripherals, according to the vendor.

The multiplexer can communicate a distance of 4,000 feet over a single standard RG 62 A/U coaxial cable.

At the peripheral side, a second Model FM1699 connects to the sole coaxial cable.

It reportedly may be connected to eight peripherals, each of which may be located as far as 1,000 feet from the unit, the vendor said.

The Model FM1699 multiplexer cost $2,200 per pair.

Fiberonics International, Inc., 325 Stevens St., Hyannis, Mass., 02601.

Units Enhance Infinet Products

Infinet, Inc., has added two digital data service units to its line of network control and management products. These Integrated Service Units are said to be compatible with AT&T data service units, adding digital transmission and diagnostic capabilities to the company's modem and multiplexer products.

The Integrated Service Unit 500 operates at external switch-selectable speeds of 2,400-, 4,800- or 9,600 bit/sec, while the Integrated Service Unit 556 transmits at 56K bit/sec, according to the vendor. Both controllers support up to 16 lines.

Test and control functions such as EIA lead control, command status transmission to central site, automatic disconnect of streaming terminals and test pattern generation for end-to-end testing can reportedly be supported by central site controllers.

Both the Integrated Service Unit 500 and 556 are available in stand-alone or rack-mount models and feature both front panel indicators and switches.

The Integrated Service Unit 500 is priced at $925, and the Integrated Service Unit 556 costs $1090.

Infinet, Inc. 6 Shattuck Road, Andover, Mass., 01810.

DEC Chip Combines Eight Asynch Lines

A communications chip that combines eight asynchronous serial lines in one device was announced by Digital Equipment Corp.

Called Octart, the new chip is intended to meet demands for more asynchronous data lines for connecting terminals, printers and other serial devices to 16- and 32-bit microcomputers, terminal concentrators and multiplexers, according to the vendor.

The hybrid chip, packaged in a 68-pin, surface-mount carrier, is functionally equivalent to eight universal asynchronous receivers or transmitters. It features integral, independent bit-rate generators for each line, supporting data rates from 50- to 19.2K bit/sec.

Prices for the Octart chip are $150 for single units and $123 in 1,000-unit quantities.

Digital Equipment Corp., 146 Main St., Maynard, Mass. 01754.

Dialog Net Aims To Stop Interruptions

Dialog Information Services, Inc. has announced Dialnet, a dedicated, packet-switched network for its subscribers. The network will reportedly support dial-up ports with transmission speeds of 300- and 1,200 bit/sec.

According to the vendor, Dialnet's prime feature is a circuit protection capability that will eliminate interruptions in subscribers' telecommunications connection to the host computer. High-volume customers will be able to install direct, leased-line connections to Dialnet from their locations at speeds up to 9,600 bit/sec, a vendor spokesman said.

The first phase of Dialnet availability begins this month with the introduction of access nodes in San Francisco; Portland, Ore.; Denver and other western cities, according to the vendor.

Dial-up access to Dialnet is priced at $6 per hour.

Dialog Information Services, Inc., 3460 Hillview Ave., Palo Alto, Calif. 94304.

Codex Unveils Net Control Switch

Codex Corp. has announced the 4803 Network Control Switch, which reportedly accommodates most common network interfaces, including V.35, V.24/RS-232-C and analog, for switching lines and devices at speeds up to 64K bit/sec.

The 4803 automates technical control functions by enabling the testing and reconfiguration of remote nodes from a central site. It also provides greater network management flexibility through a channel alarming option, which enables users to monitor digital and analog data channels for user-defined alarm conditions. This option acts as an automatic warning system for network problems.

The CRT-based device uses an English language menu-formatted interface that guides the operator through monitoring and restoral procedures. All devices attached to the 4803 can be named by location, for example, to facilitate switching and restoral.

This network control switch reportedly is configured to recognize on-line versus backup equipment. In the event of equipment failure, the operator designates to the 4803 which device has failed and which to swap in, and the 4803 automatically generates all analog and digital port-to-port connections.

The 4803 Network Control Switch, configured with a control terminal and a basic system supporting 240 ports, starts at $40,000.

Codex Corp., 20 Cabot Blvd., Mansfield, Mass. 02048.

Sytek Upgrades Localnet Tool

Sytek, Inc. has announced an upgraded software package for its Localnet 50/100 Network Control Center.

According to a spokesman for the vendor, the Version 2.03 Network Resource Manager upgrade allows users of upper-case only terminals to locate a destination defined in their data bases as lower case.

The software package reportedly will also check user data bases, noting and later correcting inconsistencies.

The Network Resource Manager is also said to allow multiple instances of the CONFIG and CENSUS modes to run concurrently on different ports, the spokesman for the vendor said.

The Sytek software upgrade package is available at no additional charge as part of Sytek's $300 to $500 annual software subscription fee.

Sytek, Inc., 1225 Charleston Road, Mountain View, Calif. 94043.

Behind the action, pageantry and spectacle of the 1984 Olympic Games is one of the most extensive data communications systems ever built.

The Electronic Messaging System—12 computers, 1,700 terminals, 300 printers—was created for the 1984 Olympics by AT&T. And tied together with Infotron networking equipment.

The EMS is designed to replace the old system of hand-carried reports in the world's first multi-site Olympics. It does everything from displaying event results, to supplying athlete biographies for reporters, to providing schedules, qualifying information and personal messages to the participants themselves.

The system's true complexity lies in the numbers of people it serves: the 50,000 officials and reporters, coaches and athletes of the Olympic family. But the demands placed on it are very much like the demands all Infotron customers place on their networks.

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INFOTRON SYSTEMS

Modem Features Built-In Diagnostics

NCR Comten, Inc. unveiled the Comten 7164-0200 modem, a 4,800 bit/sec switched-line modem for point-to-point network configurations. The fully synchronous modem operates over unconditioned, voice-grade lines in half-duplex mode, features built-in diagnostics and uses mainstream diagnostics, according to the vendor.

The Comten 7164-0200 uses digital signal processing for 98% of the modem's functions including modulation, demodulation and dynamic equalization, according to a spokesman for the vendor.

Pricing for the Comten 7146-0200 starts at $3,850, and quantity discounts are available.

NCR Comten, Inc., 2700 Snelling Ave. N., St. Paul, Minn. 55113.

Transceiver Designed to Send Classified Documents

Ricoh Corp. introduced a Rapicom digital facsimile transceiver designed for secure transmission of classified government documents.

The R-3312 is a high-speed, compact digital facsimile system capable of transmitting highly sensitive documents over normal unconditioned voice-grade telephone lines or dedicated networks, according to a vendor spokesman.

It operates through a 9,600 bit/sec step-down modem and achieves transmission speed of 30 seconds per page for average density, standard-size documents, the vendor said.

In addition, the Rapicom 3312 reportedly offers a package of standard features including error detection, turnaround polling, around-the-clock unattended reception and an automatic document feeder, the vendor spokesman maintained.

Pricing for the Rapicom 3312 will be approximately $12,000.

Ricoh Corp., 5 Dedrick Place, W. Caldwell, N.J. 07006.

Image Processor Introduced

International Imaging Systems, Inc. announced its System 600, a multiuser, image processing software package capable of integrating image and nonimage applications.

System 600 is modular in design. In addition, the system accommodates multitasking, multiple hosts and multidimensional data bases with network control and data base management information system capabilities to support a series of applications modules, according to a spokesman for the vendor.

Each workstation on a System 600 multiuser network reportedly can be used for a different image or nonimage application.

The number of workstations that are capable of utilizing the System 600 is limited only by the number of control processing units that make up the network, according to the spokesman for the vendor.

Costs per workstation for the System 600 range from $18,000 to $65,000, depending on the complexity and final location of the configuration.

International Imaging Systems, Inc., 1500 Buckeye Drive, Milpitas, Calif. 95035.

Multiplexer Out For Q-Bus Systems

MDB Systems, Inc. has announced MLSI-F-DZ11-E, a 16-port DZ11 software-compatible multiplexer for Q-bus computers.

The multiplexer subsystem includes a Federal Communications Commission-compliant 3-by-5 in. distribution panel with 9-pin connectors that bring out multiplexer functional signals such as transmit, receive, carrier detect, ring and data terminal ready, a spokesman for the vendor said.

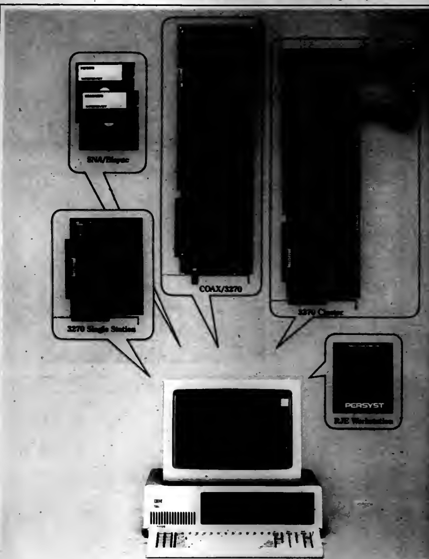
The design of the rear panels in MDB chassis and Micro/11 reportedly permits the use of two panels, allowing the installation of 32 lines of multiplexed data into a 5¼-in. chassis, the vendor spokesman said.

To maximize the number of different modules used with the rear panels, the two 25-pin connectors of each 16-channel distribution panel can be internally disconnected from the DZ11 circuitry by jumper plugs, the vendor spokesman said.

In addition, they can be reconnected to the two ports of an 11/23 Plus CPU or MXV11 multifunction module, according to the spokesman for the vendor.

The MLSI-F-DZ11-E costs $2,600.

MDB Systems, Inc., 1995 N. Batavia St., Orange, Calif. 92267.



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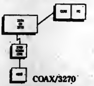

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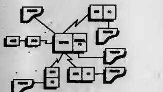

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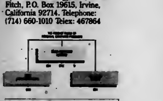

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EXIT

John King remembers SNA and SDLC mix-ups.

Communications consultant John King, above, has been wrestling with the vagaries of IBM networks for many years.

In the 1976-77 time frame, I was product planning and marketing manager for communications controllers for Memorex Corp. We had a hard-wired controller that was compatible with the IBM 2701, 2702 and 2703 called the Memorex 1270 and a programmable unit called the 1380, which supposedly would eventually be able to run Network Control Program (NCP).

I had hilarious conversations with customers asking us to make a 1270 work with Synchronous Data Link Control (SDLC).

We were fairly certain that if push came to shove, we could demonstrate it in 30 to 60 days, because it was definitely a matter of installing Usart chips that had the capability of running SDLC. No one ever bothered to explain to the customers that there is a big difference between Systems Network Architecture (SNA) and SDLC and that the 1270, just like the 2701, was totally incapable of running NCP.

A typical conversation with a customer went like this: The customer said, "Can you make it run SDLC?"

"Sure, but you wouldn't buy it," we replied. "But we would be happy to buy it," the customer said. "We love our 1270, and we really want it. We just want it to run SDLC."

We got to the point where we said, "All right, if we sold it to you, you would have to turn around and sue us because it would not do what you wanted." The customers wanted it to run SDLC. They never understood that they wanted the machine to run the whole of NCP, which later became Advanced Communications Function (ACF) NCP VS.

There was so much misunderstanding back then. People really believed that SNA and SDLC were synonymous. Here is how we finally straightened the customers out: We had to go one step further with a chalkboard, draw out a diagram and tell them, "This is what goes into the host computer. This is Vtam. Here is what goes into the front-end processor, which is called NCP. And, by the way, it can run bisynchronous of SDLC, but that is almost inconsequential compared with NCP, which is a highly complex piece of software that does other functions."

"You mean a 1270 or 2701 can't do that if it runs SDLC?" the customers asked. It took a lot of convincing.

Based on my experience to date, I am not sure that everybody out there understands the difference between SNA and SDLC, even yet.

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